Three Bays Preservation, Inc.

Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

February 21, 2005

004323

Re: Cape Wind Energy Project DEIS
USACE #NAE-2004-338-1

Dear Ms. Kirk Adams:

This letter contains our formal comments on the Draft Environmental Impact Statement (DEIS) on the proposed Cape Wind Project on Horseshoe Shoal in Nantucket Sound.

Three Bays Preservation is a non-profit organization formed in 1996 to preserve, maintain, and protect the Three Bay estuary in the Town of Barnstable and the adjacent waters of Nantucket Sound. A pamphlet and mission statement describing our organization is enclosed. Many of our more than 1000 members and subscribers are frequent users of the waters in and around Horseshoe Shoal. In conjunction with the Massachusetts Audubon Society, we are the owners and stewards of nearly 2 miles of barrier beach, known as Dead Neck/Sampson's Island, which is an important bird habitat that directly faces the proposed wind generating project *less than 5 miles away* (see attached map). In a recent questionnaire, about 90 percent of our members were opposed to the Cape Wind project proposed for Nantucket Sound.

In the past 7 years, we have expended more than $2,000,000 to restore and maintain this barrier beach. In addition, we have spent several hundred thousand dollars on dredging to remove sand depositions that obstruct the entrance channels from Nantucket Sound into our bays.

In general, we believe the DEIS contains a great deal of inadequate science and data for such a mammoth project in such a delicate and cherished location. Many of its statements are no more than conjecture. Among the issues of greatest concern to us are:

Alternative Site Evaluations

The land-based sites chosen for alternative evaluation are in New England areas where public approval or grid connections are difficult. As there seems to be no power shortage in Eastern Massachusetts, or New England for that matter, we do not understand why sites outside of New England were not studied. The federal renewable power subsidy would be available anywhere. There are successful and welcome wind farms in Central New York on unused farmland and the State is interested in more.

The alternative site analysis should be expanded to cover potential sites in the Northeast, not just New England.

Oil Spill Impacts

There is a combined total of about 65,000 gallons of oil lubricants stored on the service platform and contained in the gearboxes. Only one-half page of DEIS text discusses oil spills. The DEIS fails to address the shoreline impacts of an oil spill from the service platform or while changing turbine lubricants. Rather it says only that an oil spill and containment contingency plan will be drawn up. It fails to mention that should a spill occur, there is virtually no way to stop it from reaching our beaches because:

1. The short travel distance the oil will have from the wind farm to the surrounding shorelines.
2. The time it would take to deploy oil booms.
3. The ineffectiveness of oil booms in the swift currents and waves that prevail in Nantucket Sound.

In addition, should an oil spill occur, such as in the case of the tanker Bouchard in Buzzards Bay, the public is left with the lion's share of the cleanup cost.

The DEIS should contain the entire oil spill prevention and cleanup plan. It should also describe in detail the environmental impacts of an oil storage tank failure. Moreover, the developer should be required to post a bond in an amount to cover the cleanup cost of an oil spill.

Avian Impacts

Dead Neck and Sampson's Islands are the nesting habitat of one of the larger piping plover populations in the northeastern U.S. In addition, hundreds of terns and other shorebirds use these islands as nesting and feeding habitats. The DEIS makes no mention of these or any other specific bird habitats on adjacent shores that could be affected by the proposed project. It uses mainly extrapolations from foreign sites to prove that mortality is not "biologically significant" or that migrants "are expected to avoid" the turbine structures. It states that collisions with turbine structures will be a small fraction of the nationwide collisions with structures but makes no mention as to what the expected collisions may be as a percentage of the *local* bird population.

It is our opinion that the DEIS should include information on the interconnections of the more than 20 bird sanctuaries that abut the project area. There is no scientific study in the DEIS that addresses the post spring migration patterns between these sanctuaries. From our observations, we have noted that as birds arrive in the spring, they set up territories for a time but for reasons unknown some birds may move out of the area. It is our concern that this inter-sound migration will put these threatened and endangered birds at a significant risk of collision with the proposed 130 wind turbines.

The DEIS should address the impacts of the project on each specific major nesting area from which birds could fly into the project area in the normal course of foraging or migration. We believe that at least 5 years of avian studies covering the Cape and Islands by an independent scientific organization will be necessary before any reasonable projections of avian project impacts can be made.

Recreational Fishing Impacts

A substantial percentage of our members use Horseshoe Shoal for fishing. Targeted species include striped bass, bluefish, fluke, and scup. Several fundraising tournaments held annually by local fishing clubs use the shoal as an important catch area. Large areas of the Shoal will be closed off to fishing during several years of construction.

There seems to be no precedent as to how the vibrations, underwater sounds, and moving shadows might affect the presence of these particular species. The scour matting proposed to be placed at the base of the

wind towers will affect finfish habitat, but little site-specific data is provided on these impacts. In the event of structural failure of the mats, what plan is in place to supplement this matting? However, we can easily speculate that there will have to be some significant negative impacts on these species.

With no localized well-found science to back it up, the DEIS can only make assumptions on marine animal impacts in the proposed site. Its statement that "finfish are expected to rapidly return" after construction is inadequate at best. Research that is more direct is needed into the effects of habitat alteration on sport fish populations.

The DEIS also fails to examine what the impacts of the project might be on the aesthetics of fishing among over one hundred large rotating turbines. It is our belief that the project would greatly hamper and discourage recreational and charter fishing among these mechanical behemoths.

Boating and Navigation Impacts

In addition to fishing, many of our members and local residents cruise through the proposed site on their way to the striped bass, bluefish, and Atlantic bluefin tuna grounds east of Chatham and Nantucket. Passages to Nantucket Harbor and Muskegat channel will also pass through the site. A significant percentage of these boats have no radar, and even if radar equipped, they would have to reduce speed significantly in the restricted visibility through the field of turbines. Even with radar, the multitude of blips on a radar screen coupled with the numerous foghorns proposed would be confusing to a boater. Therefore, the risk of boats colliding with each other, or with a turbine tower, will be high in the reduced visibility so common to Nantucket Sound. The DEIS blithely states that "necessary action to avoid collision is the responsibility of the vessel's captain."

The DEIS glosses over impacts on recreational and charter fishing boat movements and makes only guesses at what the consequences may be. In addition, the DEIS contains no evaluation of the impacts of the turbines on search and rescue operations in the turbine field.

Visual & Noise Impacts

There is a large component of our community who cherish the unobstructed view from our beaches and from their boats. Indeed, it is this uncluttered view of the sea that draws people to visit and live here on Cape Cod. Construction of the proposed project represents a global change in the character of Nantucket Sound. At night, the 390 navigation lights will mar the views of the moon and stars. During the frequent fog conditions on the Sound the deafening noise from 137 non-synchronized fog horns will be unimaginable and confusing to navigation.

We believe that the DEIS is totally inadequate in addressing this change in character on the overall aesthetic value and nature of Cape Cod.

Channel Deposition

Three Bays Preservation, the Town of Barnstable, and Barnstable County spend major amounts of money to dredge our south-facing channels to remove waterborne sand. We believe that the process of driving monopoles for the turbines towers and service platform and vibra-plowing trenches for the hundreds of miles of interconnecting cables will produce large amounts of sand depositions that will aggravate the siltation problem we already have in our channels. No evaluation of such impacts is contained in the DEIS.

We believe that the DEIS should contain a detailed hydrodynamic model to determine the extent and direction of sand and silt suspended during the construction of the project and where and how

much deposition will occur. This study should also include the effects of propeller-driven suspension resulting from the repeated traffic from construction vessels.

Cumulative Impacts

The EIS looks primarily at the individual impacts of the project but fails to address the cumulative negative impacts in a holistic manner. Although the individual probability of an adverse effect may be small, the possibility of any one of dozens of negative impacts occurring in a specific time frame is much higher. In addition, the DEIS does not address the cumulative negative impacts over a long period of time. Further, no mitigation plan is proposed to address impacts arising from the proposed project. In the event that an unforeseen consequence of the proposed project does arise, what remedy does the public have to alleviate that impact?

The DEIS must address the long-term combined and cumulative effects of every potential negative impact using state-of-the-art environmental probability techniques.

In closing, it is our belief that a body of water that is so valuable to the nature of its surroundings should not be sacrificed to a developer seeking cheap land and federal subsidies for his pure profit motive. The cumulative potential negative impacts of the project far outweigh any public benefit. It is our request that this project receive substantial further review before any consideration is given to granting this permit.

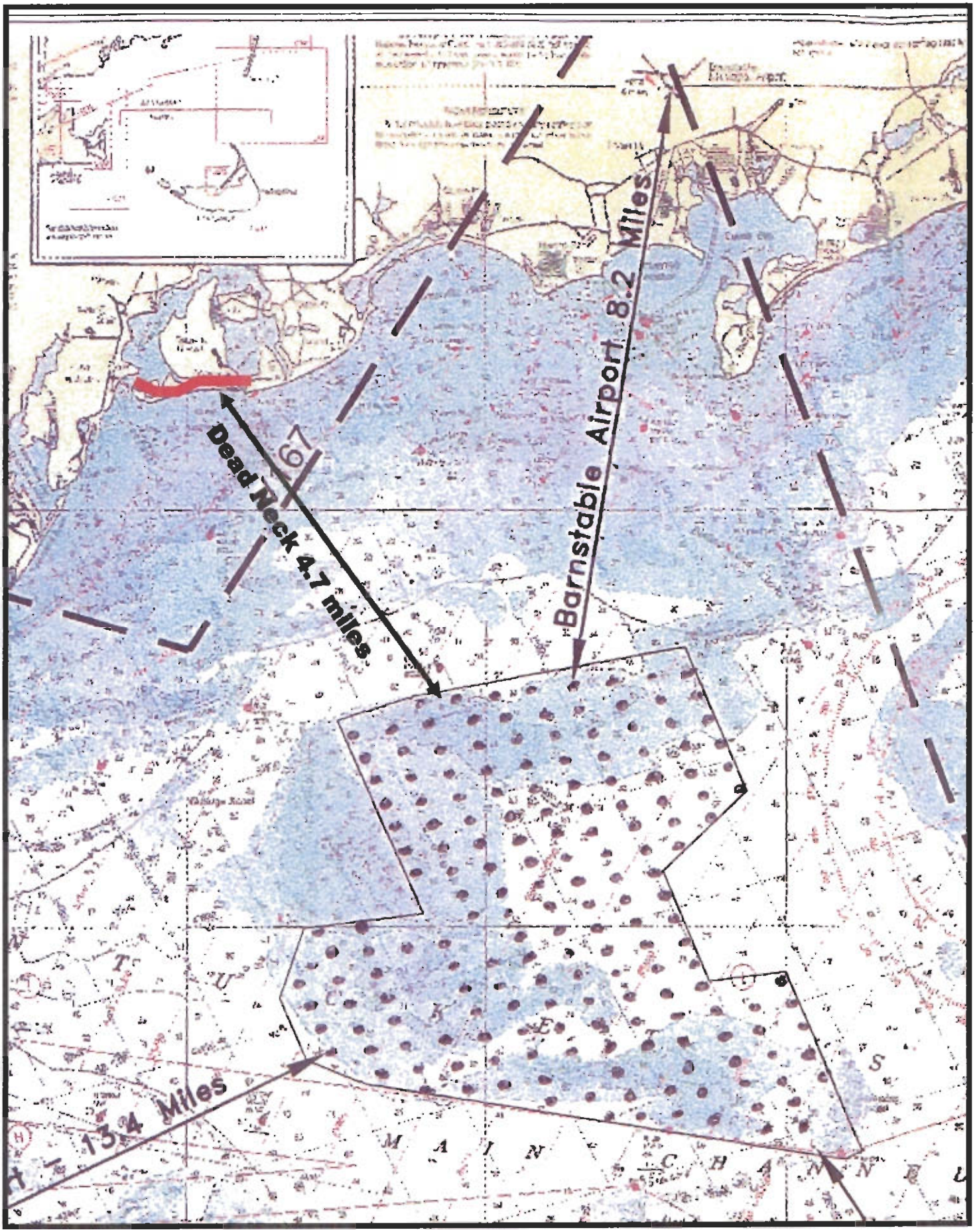
Very truly yours,

Bill Gahagan.

William G. Gahagan
President

Cc:
Sen. Rob O'Leary
Exec. Office of Environmental Affairs
Osterville Anglers Club
Mass Audubon
Alliance to Protect Nantucket Sound
Assoc. to Preserve Cape Cod
Cotuit Waders
Windstop.org
SafeWind.org
Barnstable Land Trust
Rep. Demetrius Atsalis
Rep. Jeff Perry
Cape Cod Commission
Coastal Zone Management
Cape Cod Times
Barnstable Patriot
John Klimm

Three Bays Preservation February 21, 2005



The Solution

Three Bays Preservation has reacted vigorously to find solutions to this crisis.

With the power to save our environment comes enormous responsibility: the many species of animals and plants that have shared their habitat with us deserve our best efforts to clean up the Three Bays. Marine birds, fish, shellfish, and other wildlife–including several endangered species–count on us for their survival. And from the eel grass that makes a habitat for crabs and shellfish and a nursery for fish, to the beach grasses that anchor the fragile shore, the plants that grow throughout these Three Bays are crucial to their health.

It is well within our power, and it is also our responsibility–our privilege–to protect this small but vulnerable corner of the world.

Become a member today. We need the support of concerned citizens to accomplish our goals. If we don't do whatever we can to restore and protect the Three Bays, who will?

Mat algae in Warren's Cove

Three Bays Preservation, Inc.

Mission and Goals

Three Bays Preservation, Inc. is a not-for-profit environmental organization created to preserve, maintain, protect and enhance the aquatic environment and related ecosystems of the three bay estuary comprised of West Bay, North Bay, Cotuit Bay and environs, in Barnstable County, Cape Cod, Massachusetts, and to take action to forestall and minimize threats to the health of the Three Bays system.

The goals of *Three Bays Preservation* are to:

- Restore and protect the Bays' habitats to ensure a diverse, balanced, and healthy population of fish, shellfish, wildlife, and plants.
- Assure that the beneficial uses of the Three Bays watershed, including fishing, swimming, navigation and shellfishing, are improved and protected.
- Monitor, maintain and protect the integrity of Dead Neck and Sampson's Island, sustaining the natural habitat and encouraging the vitality of the nature preserve.
- Increase our scientific understanding of the Three Bays watershed and estuary and use that knowledge to stimulate appropriate public actions.
- Improve water quality by initiating action to eliminate and prevent pollution at its source, and help minimize the discharge of pollutants from point and non-point sources.
- Maximize the exchange of water with Nantucket Sound by improving hydraulic flushing through the use of dredging and other waterway modifications.
- Increase public knowledge about the Three Bays ecosystems and stimulate public involvement in the restoration and protection of the health of the Bays.
- Establish partnerships with Town, County and State Agencies, as well as other environmental interest groups, to achieve these goals.

Three Bays Preservation, Inc.

Osterville • Cotuit • Marstons Mills

Membership

Cotuit Bay, North Bay, West Bay, Dead Neck and Our Coves.

Together, they comprise an ecosystem in crisis.

The Problem

Eutrophication, caused by excessive nitrogen buildup from home septic systems, causes algae blooms such as sea lettuce which decompose to foul beaches and rob water of oxygen needed by fish, shellfish and other bay creatures.

The decomposing algae harms other plant life, degrades marine habitats, and ruins water quality. Road runoff and improper disposal of boat wastes have further contaminated bay waters and closed shellfish beds.

Nitrogen loading and eutrophication present a serious threat to the beauty and health of our bays and the value of our homes, and inhibit the opportunities for swimming, boating and fishing.

The Problem Compounded

Shoaling has clogged existing channels and reduced the flushing capacity of the Three Bays. Without proper flushing, the waters of our bays will become increasingly contaminated.

The erosion of Dead Neck Barrier Island is also interfering with the circulation of bay waters. The alarming migration of sand along Dead Neck is closing the 250-foot entrance to Cotuit Bay at a rate of 11 feet per year.

Sea lettuce in North Bay

HOW YOU CAN HELP

By being a member of *Three Bays Preservation*, you join the effort to restore the water quality of our magnificent necklace of bays.

Your membership helps us to:

- Continue keeping you informed about our projects via newsletter, website and special events
- Promote public awareness of the problems facing the Three Bays area
- Encourage citizen participation in clean-up activities
- Continue our mission and pursue our goals, as stated on the back panel.

Support ongoing efforts to improve the quality of life on Cape Cod. **If we don't take the initiative to restore and protect the Three Bays, who will?**

ANNUAL FEE: $25

You will receive:

- Quarterly mailing of the *Three Bays Monitor* newsletter
- Invitations to events, including the Annual Meeting
- Access to Dead Neck
- Three Bays window sticker

GIVE THE GIFT OF MEMBERSHIP!

Membership in *Three Bays Preservation* makes a great gift that can be enjoyed all year. The gift recipient will receive a welcome package including the newsletter, membership card, and information about upcoming events. Complete the attached form to share the joy of membership.

Three Bays Preservation, Inc.
864 Main Street
P.O. Box 215
Osterville, MA 02655

Phone: 508.420.0780
Fax: 508.420.4489
Email: info@3bays.org
www.3bays.org

MEMBERSHIP ENROLLMENT FORM

❑ Yes, I want to be a member of *Three Bays Preservation*.

Enclosed is the membership fee of $25.

Name (Mr., Mrs., Ms., Miss)

Summer Address

City, State, Zip

Summer Phone

Winter Address

City, State, Zip

Winter Phone

Names of additional family card holders

Gift Membership Information

Name of gift recipient

Summer Address

City, State, Zip

Summer Phone

Winter Address

City, State, Zip

Winter Phone

Names of additional family card holders

Payment Information

Membership dues:	$_____
Additional gift (to support the mission):	$_____
Gift Membership dues:	$_____
Total	$_____

Please make checks payable to *Three Bays Preservation*, and mail to:

Three Bays Preservation, Inc.
P.O. Box 215
Osterville, MA 02655

Three Bays Preservation, Inc
Mission and Goals

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- Increase public knowledge about the Three Bays ecosystems and stimulate public involvement in the restoration and protection of the health of the Bays.

- Establish partnerships with Town, County and State Agencies, as well as other environmental interest groups, to achieve these goals.

Adams, Karen K NAE

From: Richard S Heinrich [nanrich286@juno.com]
Sent: Thursday, February 24, 2005 4:06 PM
To: Energy, Wind NAE
Subject: Public Comment:/ Cape Cod Wind Energy Proposal

REF: Cape Cod Wind Energy Proposal

To: Col. Thomas Koning U.S. Army Corps of Engineers
and Karen Kirk-Adams, Cape Wind Energy EIS Project.

C04824

I find that today is the last day for the public to make comments on the cape wind project and I want to be part of this process.

I find the approval process is lacking and the general concerns of the region not being addressed.

I am in favor of renewable energy but not in favor of this project as it is currently outlined.
The interconnections between the proposed wind farm and the power grid is specifically troubling not to mention the most favorable location for the developer for the turbines in Nantucket Sound.

Please count me against the project at this time, thank you.

Sincerely,

Richard S. Heinrich, of Bedford and Mashpee MA.

004825

COMMENTS OF
NATURAL RESOURCES DEFENSE COUNCIL, INC.
ON THE
CAPE WIND ENERGY PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
U.S. ARMY CORPS OF ENGINEERS REFERENCE FILE NAE-2004-338-1
FEBRUARY 24, 2005

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INTRODUCTION

The Natural Resources Defense Council, Inc. ("NRDC") respectfully submits these comments on the Draft Environmental Impact Statement/Draft Environmental Impact Report/Development of Regional Impact ("DEIS") for the proposal by Cape Wind Associates LLC ("Cape Wind") to construct the Cape Wind Energy Project, a 130 turbine offshore wind project proposed in federal waters in Nantucket Sound off Cape Cod, Martha's Vineyard and Nantucket, Massachusetts. NRDC is a national environmental advocacy organization with its headquarters in New York City. NRDC has almost 500,000 members nationally, including almost 18,000 in Massachusetts. NRDC uses law, science and the support of our members and online activists to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things. Combating global warming and protecting the marine environment are two of NRDC's highest priorities.

NRDC has long been a strong supporter of increased use of wind energy. The technology for producing electricity from wind energy has improved greatly over the past twenty years, and wind—on and offshore—now represents one of the most promising sources of emissions free electricity. More than 4200 megawatts ("MW") of wind power have been installed on land in the United States, most of it in the West, and in the process much has been learned about siting and designing wind generation to minimize environmental damage. Recent proposals for offshore wind farms—most prominently Cape Wind—have focused attention on the benefits and impacts of offshore wind. Cape Wind and other offshore proposals for wind electricity generating facilities off the East Coast present an opportunity to boost significantly the amount of energy produced from

renewable sources in the eastern United States. Indeed, offshore wind power is probably the region's largest untapped renewable energy resource. Developing this resource is essential to help reduce local, regional and global air pollution that threatens public health, critical habitat, and the very sustainability of the planet.

At the same time, offshore wind energy projects will utilize areas of the ocean that are held in common by citizens of the United States, and, if improperly sited and designed, could pose risks to natural resources in biologically-rich near shore waters. Renewable energy projects must not – and need not – undermine protection of coastal habitats and living marine resources. To further this goal, prior to the siting and operation of such projects, NRDC strongly supports comprehensive environmental reviews to consider potential impacts on coastal and marine life and habitats, the safety of local and migratory bird populations, visual impacts, and noise. However, no form of power generation is without some impacts. Therefore, environmental reviews should also address the substantial near- and long-term environmental benefits that wind projects can provide to allow a balanced assessment of proposed projects, particularly in comparison to other forms of electricity generation.

With these principles in mind, NRDC has a strong interest in the environmental and public health benefits of the Cape Wind Project, which would provide up to 450 MW of electric power without emitting any air pollution. At the same time, NRDC has also strongly supported a full environmental review process for the Cape Wind Project to ensure that both its benefits and impacts are fully analyzed and disclosed, and that any negative environmental impacts are fully mitigated. NRDC staff and outside experts, working in coordination with the Conservation Law Foundation, have now reviewed the

4,000 page Draft Environmental Impact Statement ("DEIS") prepared by the U.S. Army Corps of Engineers for the Cape Wind project.[1] NRDC's review of the DEIS focuses on the three substantive areas that we have identified as most crucial to understanding the benefits and impacts of the Cape Wind Project. In Section I, we discuss the substantial air pollution and public health benefits of the Cape Wind Project, which are areas where the DEIS's discussion should be amplified. In Section II, we discuss the DEIS's analysis of potential acoustic impacts of the Project on marine species, particularly during construction, and we recommend additional mitigation measures to minimize the potential for any marine mammal impacts. In Section III, we discuss the DEIS's analysis of the potential impacts of the Project on the endangered Roseate Tern and recommend a pathway toward better understanding these potential impacts and toward fully exploring available operational and design options to minimize or avoid any such impacts. Lastly, in Section IV, we discuss proposed next steps for the project and outline an approach to developing an adaptive management program that will ensure that any unexpected post-operational impacts are monitored and mitigated.

NRDC believes that the public interest will be best served if the Cape Wind Project continues through the permitting process, and, if possible, to construction and operation. This will depend upon an ultimate determination that the Project's benefits outweigh its impacts, that the Project is consistent with protection of wildlife and ecosystems in Nantucket Sound and that it complies with all applicable laws. The Project has cleared many hurdles during a long and public environmental review and permitting

[1] NRDC would like to thank and acknowledge the assistance of Dr. Jan Beyea in assisting NRDC in analyzing the avian sections of the DEIS and Dr. Christopher Clark in analyzing the acoustic and marine mammal sections.

process. However, not surprisingly for a project of this size and complexity, and the first of its kind in the United States, the Project's quite thorough environmental review has left some questions still unresolved. The Project's potential impacts on the endangered Roseate Tern are a key area where more answers are needed. It is important that this issue be addressed and resolved in the near future in the context of finalizing the EIS. We strongly hope that additional analysis and, if necessary, any additional data collection, will demonstrate that the Project is consistent with marine wildlife protection, allowing the Project to proceed. We stand ready to participate in any further regulatory, scientific review or stakeholder process necessary to achieve this goal.

I. THE PUBLIC HEALTH AND ENVIRONMENTAL BENEFITS OF THE CAPE WIND PROJECT.

The DEIS focuses almost exclusively on the potential negative environmental impacts from the proposed Cape Wind project, but unlike most large power plant projects, the Cape Wind project would provide large and important air quality and public health benefits. While the DEIS provides sufficient quantification of the reduction in air pollution, more needs to be said about the importance of these reductions on a local, regional and global level. The final EIS should also provide a greater discussion of the importance of renewables generally and of this project in particular. Finally, all of the Project's benefits should be brought together in one section that allows for a clear presentation of these benefits and the broader context that they provide.

A. Air Quality and Public Health Benefits

As part of the needs analysis, Cape Wind hired La Capra Associates to assess the air pollution emissions reductions associated with the operations of the proposed project.

Using marginal emissions rates from the year 2000 for the New England Power Pool, La Capra estimated that the project would result in annual emissions reductions of about 1,180 tons of nitrogen oxides (NOx), 4,000 tons of sulfur dioxide (SO_2), 949,000 tons of carbon dioxide (CO_2), a "few hundred" pounds of mercury, and an unspecified amount of particulate matter. DEIS at 5.15.2. For the purposes of assessing the public health benefits, the DEIS uses an estimate of 177 tons per year based on the average year 2000 emissions of three plants in the Cape region. The DEIS discussed these reductions in terms of the regulatory requirements that the Project and Massachusetts face, and the section on public health benefits from the project provides some assessment of the importance of reductions in particulate matter. DEIS at 5.16.4.3. However, there is insufficient explanation of the broader public health benefits associated with reducing emissions of each of these pollutants.[2]

i. Local Benefits

Even though the assessment of potential emissions reduction for mercury and particulates relies on data from past years, there is no doubt that reductions will occur and that they will provide important public health benefits. Indeed, the assessment of the potential public health benefits from reduced particulate emissions contained in the DEIS provides a clear picture of how important the air pollution benefits of the project could be.

Particulates. Unlike NOx, SO_2, and CO_2, for which the DEIS draws on NEPOOL marginal emissions rates for particulates, due to lack of better data the DEIS

[2] The information presented in these comment on health effects from air pollution draws heavily from materials prepared by Synapse Energy Economics including especially: Woolf, et. al., *Air Quality in Queens County: Opportunities for Cleaning Up the Air in Queens County and Neighboring Regions*, Synapse Energy Economics, May 2003. The health effects information in this report was researched and written by: Dr. Jonathan Levy, Patrick Kinney, Susan Greco and Kim Knowlton.

simply uses the average year 2000 particulate emissions rate for three plants in the Cape region. See notes at Table 5.16-4. As a result the public health benefits calculated in the DEIS should be considered indicative rather than precisely predictive. Nevertheless, they provide a clear picture of the public health importance of this pollutant and the importance of the Project in reducing its emissions.

Particulate matter can contain many different chemicals or substances, and can vary greatly in size. The term "PM_{10}" refers to particles less than 10 micrometers (μm) in diameter. Similarly, "$PM_{2.5}$" refers to particles less than 2.5 μm in diameter. A large body of work has been developed over the past several decades, documenting significant health impacts from exposure to PM_{10}. However, over the past decade, evidence has grown of even greater health risks from fine particulate pollution. Fine particles are believed to pose greater health risks than larger particles, because they are small enough to be inhaled deep into the lungs, while larger particles tend to be deposited in the upper airways. In fact, some scientists are beginning to discuss "ultrafine" particles, less than 0.1 μm in diameter, as potentially the most dangerous particles.[3]

In response to the growing evidence of health impacts from fine particulates, EPA promulgated new ambient air standards for fine particulate matter in 1997. (Previously, only PM_{10} had been regulated.) As the DEIS points out, Massachusetts is expected to be designated "attainment/unclassifiable" due to insufficient data. However, even at levels below the National Ambient Air Quality Standards reduction in fine particulate emissions can have important health benefits.

[3] Spengler J, Wilson R 1996. "Emissions, dispersion, and concentration of particles," in Wilson R and Spengler JD. (eds): *Particles in Our Air: Concentrations and Health Effects*, Harvard School of Public Health.

Two of the most important fine particle types are secondary sulfate and nitrate particles. The term "secondary" refers to the fact that they are formed in the atmosphere, as the primary pollutants emitted from smokestacks react with each other and naturally occurring substances. Sulfates are formed in the atmosphere when SO_2 gas reacts with ammonia gas, and nitrates form in reactions involving NO_x emissions. On average, sulfates and nitrates together make up about half of ambient fine particulate matter in the Northeast. As discussed later the estimates of NOx and SO_2 emissions reductions are only first order estimates, but still the Cape Wind project will certainly reduce the levels of both primary and secondary fine particulate emissions.

Fine particulate matter can travel long distances in the atmosphere, meaning that power plants across a wide geographic area contribute to fine particulate pollution in New England. However, the maximum pollutant concentrations from any given source are generally close to the source – anywhere from less than a mile to tens of miles, depending on the height of emission and the type of particulate matter.[4] Thus, New England residents will benefit more from reductions in fine particulate emissions at New England power plants than from reductions at plants in other upwind states.

A large body of scientific work documents a range of health impacts, including premature death especially from cardiopulmonary and lung cancer related complications, from short-term exposure to PM_{10}. A recent summary article found well over one hundred published studies, and the findings of these studies are extraordinarily

[4] Levy JI, Spengler JD 2002. Modeling the benefits of power plant emission controls in Massachusetts. J Air Waste Manage Assoc 52: 5-18. Levy JI, Spengler JD, Hlinka D, Sullivan D, Moon D 2002. Using CALPUFF to evaluate the impacts of power plant emissions in Illinois: Model sensitivity and implications. Atmos Environ 36: 1063-1075.

consistent.[5] However, over the past decade several important studies have focused attention on fine particulates. Two of the most compelling studies are prospective cohort studies that control for potential confounding factors at the individual level, such as smoking, age and occupational exposure. These studies are known as the Six Cities study and the American Cancer Society study.[6] Though other cohort studies exist, these two studies are most often cited, primarily because they have undergone extensive scrutiny and re-analysis.

In 2000, the Health Effects Institute (HEI) released two much anticipated reports on the health effects of fine particulate matter: the *National Mortality, Morbidity and Air Pollution Study* and the *Particle Epidemiology Re-Analysis Project.*[7] Both studies strongly support the results of the Six Cities and American Cancer Society studies, and resolve some of the uncertainties identified in those studies (particularly with respect to the extent to which the health effects discussed in these studies could be attributed to other pollutants).

Using a study by the Harvard School of Public Health, the DEIS calculates that reduced particulate emissions due to the Cape Wind project could avoid 12 premature deaths, 20 cases of bronchitis, 200 emergency room visits, 5,000 asthma attacks, 15,000 restricted activity days, and 35,000 respiratory symptom days. These public health benefits would have an annual monetary value of about $53 million. DEIS at 5.16.4.3 page 5-270.

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[5] Stieb DM, Judak S, Burnett RT 2002. Meta-analysis of time-series studies of air pollution and mortality: Effects of gases and particles and the influence of cause of death, age, and season. J Air Waste Manage Assoc 52: 470-484.
[6] Dockery DW, Pope CA III, Xu X, Spengler JD, Ware JH, Fay ME, Ferris BG Jr., Speizer FE 1993. An association between air pollution and mortality in six U.S. cities. New Eng J Med 329: 1753-1759.
Pope CA III, Thun MJ, Namboodiri MM, Dockery DW, Evans JS, Speizer FE, Heath CW Jr. 1995. Particulate air pollution as a predictor of mortality in a prospective study of U.S. adults. Amer J Respir Crit Care Med 151: 669-674.
[7] Health Effects Institute, The National Morbidity, Mortality and Air Pollution Study, July 2000. Health Effects Institute, Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Morbidity, July 2000.

In sum, very real and measurable health benefits will accrue to the citizens of Massachusetts and New England if ambient fine particulate levels are lowered, and it is critical to factor these benefits into assessments of the proposed Cape Wind project.

Mercury and Other Toxics. A wide variety of air pollutants have been classified as toxic. Mercury is by far the most important air toxic in the electric power industry, due to the quantities in which it is emitted by coal-fired plants and its health impacts. However, fossil-fired power plants also emit a range of toxic substances. Combustion of natural gas, for example, produces appreciable levels of formaldehyde, a product of incomplete methane oxidation, and plants burning residual oil often emit significant levels of nickel. Municipal solid waste incinerators, which burn about 40 percent fossil-fuel based products, produce a significant amount of mercury and are also a major source of dioxins. Dioxins have been demonstrated to be highly carcinogenetic, even in extremely small amounts. Though substances like these rank behind mercury in terms of the total health risks posed, reducing the levels at which they are emitted will provide benefits.

Fish consumption is the dominant exposure pathway for methylmercury, the form of mercury most dangerous to humans. As airborne mercury is deposited in lakes and rivers, it accumulates in sediments and in the tissues of certain species of fish. Populations that regularly consume local fish – generally lower income populations – and pregnant women and children are most at risk. Methylmercury is a developmental neurotoxin that damages the nervous systems of fetuses and children following a brief exposure period. Advisories warn citizens not to eat fish from specified lakes and rivers in over 40 U.S. states, including Massachusetts.

ii. Regional Benefits

Because NOx and SO_2 emissions are easily transported by the wind, they can impact large regions. In part because of this, SO_2 has been regulated under a national cap and trade system for over a decade and NOx emissions are regulated under a regional cap and trade system in the Northeast. Because of the trading mechanism involved in these regulations, the emissions reductions estimated by La Capra in the DEIS can only be considered first order estimates. However it is reasonable to expect that the presence of the Cape Wind project would eventually enable the lowering of the caps for these pollutants and that some if not all of the emissions reductions estimated by La Capra could be locked in through other regulatory mechanisms. Certainly the cap and trade systems are essential to maintaining this trend, but the simple fact is that cleaner, newer resources are what make it possible and the Cape Wind project would greatly contribute to continuing these trends. We also note that a recent New England Power Pool analysis of marginal emissions rates in New England shows a regular downward trend in emissions, which the analysis attributes to the addition of less polluting resources.[8] This suggests that the addition of Cape Wind will continue and increase this trend. Even if only a portion of the estimated emissions are realized, the final EIS should contain a greater discussion of the public health benefits that would accrue from reducing this two important pollutants.

Nitrogen Oxides. Nitrogen oxides (NO_x) are regulated as a criteria pollutant because they have been shown to have both environmental and human health impacts. On the environmental side, NO_x combines with water in the atmosphere to form nitric

[8] 2003 NEPOOL Marginal Emissions Rate Analysis, Dec. 2004 at 9. http://www.iso-ne.com/Planning_Reports/Emissions/Marginal_Emissions_Analysis_2003.pdf

acid, which contributes to the acidification of lakes and soils. On the public health side, NO_x is a precursor to both fine particulate matter and ground-level ozone, or "smog."

Emissions of NO_x are a major contributor to two of the most important airborne health threats in the world – ozone and fine particulates. Like nitrates and sulfates, ozone is a secondary pollutant. Ozone is formed most intensively during the summer months through reaction of NO_x, volatile organic compounds, and sunlight. The reaction is temperature dependent, and more ozone is formed from these precursors at higher temperatures.

In Massachusetts, as for much of the East Coast, NO_x emissions have been regulated via a regional cap during the "ozone season," the period from May 1 through September 30 of each year. This is the period during which ozone formation causes the most significant air pollution problems and health impacts. As noted in the DEIS, DEIS at Section 5.15, page 255, the Massachusetts Department of Environmental Protection ("MADEP") has established an allotment of NOx emissions credits that would be available to a project such as Cape Wind. If the project collects these credits and sells them to other potential emitters, and these other plants actually emit more pollution as a result, then the La Capra estimates would overstate emissions reductions by the amount of credits allocated to the project. However, as is discussed above, there is ample reason to believe that the Project would help to enable a continuing trend in lowering these emissions beyond what the current cap and trade system drives.

In 2004, EPA promulgated a new 8-hour ozone standard and Massachusetts is in moderate nonattainment, which will require the state to go significantly further than the current State Implementation Plan based on a 1-hour standard. Thus it is very likely that

the Cape Wind project would become part of the Massachusetts State Implementation Plan to reduce ozone levels effectively locking in the Cape Wind emissions reductions.

Ozone is a strong oxidant gas that, upon inhalation, causes damage to the sensitive cells deep within the lung. Ozone exposure has been associated with a variety of respiratory effects in both human chamber studies (in which human subjects are exposed to controlled levels of ozone) and epidemiological studies. These effects include pulmonary inflammation, decreases in lung function and the precipitation of asthma attacks.

Epidemiological studies have reported acute associations between ozone and a number of health outcomes, including respiratory symptoms, asthma exacerbations, emergency room visits, hospital admissions, and deaths. One recent article summarized this literature and provided estimates for three acute health outcomes that tend to contribute most to the total impacts of ozone – premature deaths, hospital admissions for respiratory causes, and days with minor restricted activities.[9] In addition, a growing body of research indicates that there are long-term health effects associated with chronic (as opposed to acute) exposure to ozone.

Sulfur dioxide. Sulfur dioxide (SO_2) is a criteria pollutant and the major contributor to acid rain. SO_2 also contributes to respiratory illness, especially among children and the elderly and results in visibility impairment through the formation of haze. SO_2 is emitted from fossil fuel generation when elemental sulfur is present in the fuel source. Because of the relatively high sulfur levels in coal, coal-fired power plants

[9] Levy JI, Carrothers TJ, Tuomisto J, Hammitt JK, Evans JS 2001a. *Assessing the public health benefits of reduced ozone concentrations*. Environ Health Perspect 109: 1215-1226.

are responsible for the vast majority of electric utility SO_2 emissions. The electric generating sector is responsible for over 65 percent of U.S. SO_2 emissions.[10]

Atmospheric SO_2 and NO_x interact with water vapor and other gases to form acidic solutions of sulfuric and nitric acid. Deposition of these acids, commonly known as acid rain, occurs when these acidic solutions (or their gaseous and particle-based counterparts) fall to the earth. Acid rain damages the natural environment by changing soil composition, acidifying lakes and streams, and harming forests and vegetation. The acidification of water bodies often results in their inability to support aquatic or plant life. Long-term exposure to acid rain poses a serious threat to the health and biodiversity of an ecosystem. Acid rain also accelerates the decay of buildings and monuments.

The EPA's Acid Rain program was established to achieve the SO_2 reduction goals of Title IV of the Clean Air Act. The program, which is currently in its second phase, utilizes market-based mechanisms such as emission allowance auctions and trading to obtain SO_2 emission reductions at over 2,000 fossil-fueled generating units across the country. As noted, the Acid Rain program has been successful, but additional reductions are necessary. A 1995 EPA study estimated that SO_2 and NO_x emissions need to be reduced another 40-50 percent beyond Clean Air Act requirements in order to protect sensitive ecosystems.[11]

Thus, while it is possible that initially any reductions in SO_2 emissions caused by the Cape Wind project will simply be turned into credits and sold to allow higher emissions at other sources, in the long run, it is also likely that the presence of Cape

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[10] See US EPA, *Air Quality Where You Live,* available at http://www.epa.gov/air/urbanair/

[11] See: Governor Pataki's Environmental Press Release, *Governor Pataki Proposes Toughest Acid Rain Controls in the Nation,* February 14, 2002. Available at http://www.dec.state.ny.us/website/press/newrelgv.html.

Wind and other zero tailpipe emissions projects similar to it will help to sustain the trend toward lower emissions and to justify lower SO_2 emissions caps.

iii. Global Benefits: Global Warming.

Global warming is one of the greatest environmental threats facing the world today. Despite this, it receives only passing mention in the DEIS with virtually no discussion of its already mounting impacts on public health, wildlife, habitats and the economies of the world, including New England and Cape Cod. Carbon dioxide (CO_2) is the most prevalent of the greenhouse gases – gases that are trapping heat in the earth's atmosphere and warming the earth's surface. Consequences of climate change include the spread of infectious diseases, an increase in the frequency and severity of extreme weather events, coastal zone flooding, loss of habitat, and agricultural disruption. Power generation is the largest U.S. source of CO_2, responsible for nearly 40 percent of total U.S. emissions.

In July 2003, the United Nations World Meteorological Organization (WMO) released a report stating that recent severe weather events including heat waves and severe storms are attributable to global warming.[12] The WMO notes that the number of such events have been increasing during the past several years. Past studies of the regional impacts of such severe weather events and potential sea level rise have suggested that New England and in particular the Cape and Islands are vulnerable to global warming. Figure 1 shows the parts of the Cape and Islands that would be flooded by a 1.5 and 3 meter storm flood.[13]

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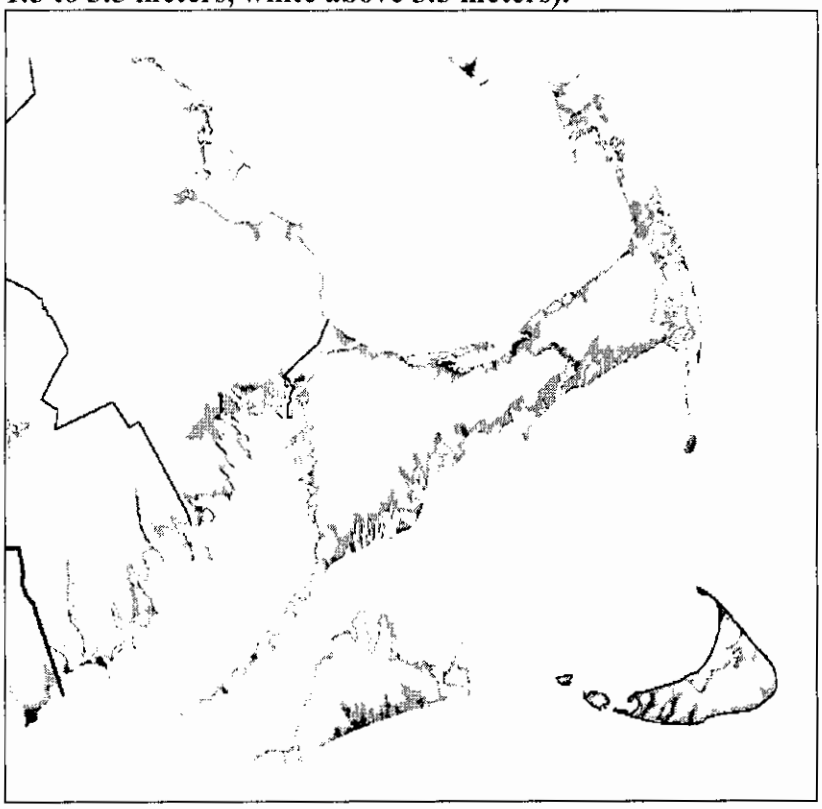
[12] "Extreme weather set to increase" at http://www.news24.com/News24/Technology/News/0,,2-13-1443_1381680,00.html.

[13] J.G.Titus and C.Richman, 2000, "Maps of Lands Vulnerable to Sea Level Rise: Modeled Elevations Along the U.S. Atlantic and Gulf Coasts." Climate Research 2000. Elevations based on computer models, not actual surveys. Coastal protection efforts may prevent some low-lying areas from being flooded as sea level rises. The 1.5-meter contour

Figure 1. Potential areas of flooding from sea level rise (red-below 1.5 meters, blue-1.5 to 3.5 meters, white above 3.5 meters).



More frequent flooding in the near-term and sea level rise will not only destroy extremely valuable property in the Cape and Island regions, but will also destroy much of the habitat used by birds, including, particularly, the endangered Roseate Terns discussed in other parts of these comments.

Global climate models also predict that worldwide daily mortality and morbidity due to extreme heat events could significantly increase in this century, especially among the elderly poor who often have pre-existing health conditions and may lack air conditioning or access to air conditioned spaces. Other health impacts of climate change

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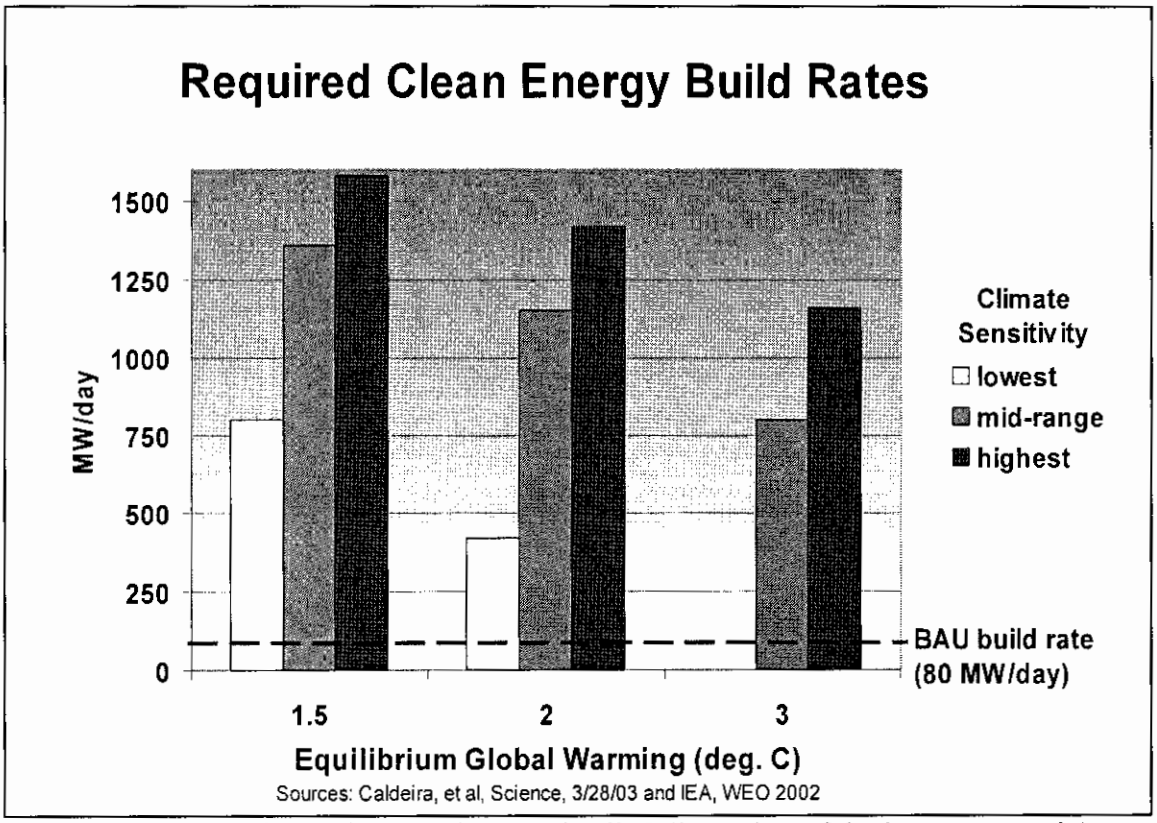
depicted is currently about 1.3-meters above mean sea level, and is typically 90 cm above mean high tide. Parts of the area depicted in red will be above mean sea level for at least 100 years and probably 200 years. The 3.5-meter contour illustrates the area that might be flooded over a period of several centuries. However the window of opportunity to avoid significant global warming and the likely accompanying sea level rise through by reducing anthropogenic greenhouse gas emission is estimated to close in about 10 years.

could include increased rates of secondary air pollutant formation (e.g., ground-level ozone and particulate matter), incidence of vector-borne and water-borne diseases and, as noted, increased frequency and severity of storms.[14]

Of course, the Cape Wind project will not, in and of itself, stop global warming. However, it is, to our knowledge, the largest single source of supply-side reductions in CO_2 currently proposed in the United States, and perhaps in the world. Furthermore given current rates of greenhouse gas emissions and the current concentration of these gases in the atmosphere, it is possible to estimate the amount of zero-carbon emission electricity resources we need to be adding per day to avoid unacceptable levels of global warming. Figure 2 shows the required levels given different potential levels of warming and different potential sensitivities of the global temperature to greenhouse gases. The figure also shows the IEA's forecast of the rate at which we are likely to build these resources over the next 30 years—less than one-tenth of what we need to be building to avoid a 2 degree Celsius warming given a mid-range sensitivity to greenhouse gases. The only way we can be sanguine about the rate at which we are currently building resources such as Cape Wind is if we assume that we can tolerate a 3 degree Celsius warming and that the climate is extremely insensitive to greenhouse gases. (Note that the temperature difference between today and the last ice age is just 5 degrees Celsius).

[14] *Climate Change and Public Health: Impact Assessment for the NYC Metropolitan* Region at http://metroeast_climate.ciesin.columbia.edu/health.html.

Figure 2. Required Clean Energy Build Rates.



The final EIS should contain a much more detailed discussion of the importance of the potential CO_2 emissions reductions, their benefits and the context in which the Cape Wind project's emissions reductions would occur.

B. Other Environmental Benefits

i. Reduced Fossil Fuel Use

The discussion of the No-Action Alternative gives only passing mention to the broad benefits of reduced reliance on fossil fuels that the Cape Wind project offers. The final bullet in Section 3.3 reads: "[Under the No-Action Alternative] Secondary environmental impacts related to fossil fuel production, transportation and storage will continue or increase (such as mining of coal, LNG transportation safety, oil spills from marine barges, natural gas pipeline construction etc.)." DEIS at 3.3 page 2-28. Obviously these impacts would not cease if the Cape Wind project is built, but the Project would be

an important and precedential step in our country's efforts to reduce these impacts. And these impacts are not parenthetical. Mining and drilling for fossil fuels causes untold destruction of habitat and water pollution. Fossil fuel transportation causes air pollution and requires pipelines across wild and untouched parts of our country. The people and wildlife of Cape Cod and the Islands have suffered repeatedly from oil spills and other fossil fuel-related impacts in the last century.

Fish impacts are a good example of these related impacts. The DEIS finds that the impacts of fish populations will be minimal and temporary. DEIS at 5.4. In contrast, the impacts of fossil fuel and nuclear power plants on fish are significant and permanent. Most existing fossil fuel and nuclear power plants use tremendous amounts of water for cooling. Where these power plants are located next to lakes, rivers or the ocean, it is common practice for them to use what is known as once-through cooling, which entails sucking lake, river, or ocean water into the plant's cooling system, where it absorbs waste heat, and then dumping the hot water back into the lake, river or ocean. This process kills thousands of fish, especially eggs and juvenile fish, at each power plant that uses it. The hot water also destroys habitat. New power plants are increasingly shifting to different cooling systems that use less water and kill fewer fish. However, the Cape Wind project will still reduce power plant fish kills to the extent that it displaces existing generation with once-through cooling systems. Moreover, by reducing fossil fuel use, the Project would make a positive difference and by laying a foundation of experience with offshore wind, the project would help make a much larger difference.

The final EIS should be clear that while the Project's potential contribution to reducing these impacts is difficult to quantify, it is a clear project benefit. And, in fact, as

the first potential offshore wind project, it is more important than any single set of numbers would make it appear.

ii. Environmental Justice

While the DEIS contains a technically sufficient discussion of the environmental justice impacts of the project, at Section 5.16.4.9, there is no acknowledgement in this section or in the No-Action Alternative that if the project is not built, existing environmental justice impacts will at least continue unabated and may increase. The existing power generation system disproportionately impacts poor communities and communities of color. If the project is built, these disproportionate impacts will be lessened. If it is not, they will continue and probably get worse as the overall demand for electricity continues to grow and the goal of developing renewable resources and offshore wind in particular is dealt a major setback. The final EIS should explicitly acknowledge that by reducing air pollution across New England and reducing the need for new power plants and displacing existing generation, the Cape Wind project will help to reduce disproportionate public health impacts on poor communities and communities of color.

II. ACOUSTIC IMPACTS

The Project's acoustic (noise) impacts must be carefully analyzed, particularly for marine mammals, whose physiological health and well-being can be damaged by harmful noise levels, and appropriate mitigation measures must be deployed. The current analysis of the Project's acoustic impacts in the DEIS needs to be corrected, expanded and improved in the FEIS, and, most importantly a more robust framework for monitoring and mitigation must be included in the FEIS. If the practical steps recommended in

these comments are taken, Project construction and operation can be made consistent with protection of marine mammals.

A. Overall Noise Analysis

The DEIS section on noise (Section 5.11) needs to be revised to focus on the forms of noise that are harmful to the animals who will be in the closest proximity to the turbines, rather than examined through an anthropocentric perspective of noise impacts on humans. For example, Section 5.11.1.1, on acoustic concepts, focuses on "loudness" and "pitch." But the terms "loudness" and "pitch" are actually psychological concepts, encapsulating the concept of what a human perceives when experiencing the relative intensity or pressure of a sound. The FEIS analysis should not discuss "loudness" but the actual physical measures to which it pertains, e.g., intensity, energy flux density, pressure. These measures should be referenced consistently either in terms of levels in dB or in absolute terms, for example, Watts per meter squared. Distinctions between the dB measurements reference levels used for in-air (20 μPa) and in-water (1 μPa) must be crystal clear and consistent.

The discussion of human hearing is relevant to possible in-air responses of humans and serves perhaps to introduce the reader to some basic auditory concepts that they can relate to. However, the species of greatest concern relative to auditory impacts are those that might be exposed to acute levels or chronic levels of noise with the potential to cause physiological harm, or whose response to noise generated either in-air or underwater. The FEIS must discuss auditory impacts relative to the animals of concern, such as marine mammals and sea turtles. In cases where information is not available, the usual practice of using a surrogate species and making conservative

assumptions is recommended. Thus, the practice here of using A weighted sound level curves is inappropriate and potentially misleading. The potential noise impacts will not be on humans, they will be on non-human animals.

B. Underwater Noise Impacts

The current treatment of underwater sound in the DEIS is incomplete and includes some inaccuracies that require correction. The characteristics of the Project's various underwater sounds expected to be generated during construction and operation are crucial to understanding the Project's potential impacts on marine mammals. There are well-documented recording and analysis methods available for the characterization and quantification of underwater sound. The DEIS, however, characterizes the sounds to be generated by jet plows used in construction by reference to subjective reports from human divers. See Section 5.1.2.6. Instead of this anthropocentric approach, the FEIS should rely on descriptions of underwater acoustic characteristics from construction that can be found in the FEIS and subsequent technical reports from the BP Exploration (Alaska) Inc. Northstar project. In other instances, too, the DEIS incompletely describes acoustic impacts.

C. Acoustic Impacts on Marine Mammals: Need for Monitoring and Mitigation

There are two levels of harm to marine mammals that have the potential to arise from acoustic impacts: "level A" refers to physiological damage including hearing loss, TTS, air bladder rupture and hemorrhaging; "level B" refers to harassment activities which can disturb and disrupt marine mammals and their behavior patterns. In our assessment, Level A impacts on marine mammals as a result of the Project are unlikely. However, the likelihood of level B impacts on marine mammals during Project

construction is much higher given the density in space and time of the construction activities – especially due to acoustics from pile driving and support vessels.

Accordingly, the FEIS needs to include strong, viable mechanisms that will require the Project to monitor for acoustic events that might put animals at risk from both damage and harassment, and it needs to have effective mechanisms in place to mitigate should the monitoring system detect/predict the approach of an unacceptable level of risk. Specific requests for FEIS and conditions for any permit include (1) appropriate characterization of underwater acoustic signals, including ultrasound, (2) use a robust system of both acoustic and visual surveillance for marine mammals and sea turtles during construction, (3) schedule the time of construction activity so as to avoid periods of peak abundance for endangered species such as right whales, and (4) include a monitoring plan that will provide ongoing data on possible impacts for use in adaptive management. We also propose the following specific measures to minimize any potential impacts on marine mammals.

Safety radius. The DEIS proposes use of a "safety radius" of 500 m to protect marine mammals and sea turtles during construction. Section 5.5.5.1.1, page 5-77. The area of this zone of potential impact, about 1/3 of a square mile, is substantial. The FEIS must ensure that the exclusion zone for noise exposure will be effective by including a strong plan for establishing pre-construction, site-specific acoustic characteristics (e.g., ambient noise levels, transmission loss), and for monitoring noise characteristics (e.g. spectral energy distribution, transients, broadband levels) and animals of interest (approaching and within the zone) during the construction phase. Furthermore, the FEIS must ensure that the operational zone includes a strong mitigation system once an animal

comes within the safety exclusion zone. The DEIS indicates that one qualified NMFS observer will be stationed at the site during construction to monitor for marine animals of concern within the 500 m perimeter of pile driving sites. This is insufficient. The observation plan should be augmented by having a total of 4 on-site spotters, and an underwater acoustic monitoring system for detection of marine mammal sounds and for monitoring the intensity of the sounds produced by construction activities (e.g., pile driving, vessel traffic). Underwater autonomous or cabled seafloor recording systems are available for detection of sounds made by whales and should be installed as part of a warning system that would monitor for the presence of marine animals (particularly endangered species) in the area during construction. A strong mitigation protocol for ensuring that intense noise production is halted rapidly if and when these animals enter the radius must also be developed for the FEIS. This would include a number of modeling exercises predicting the potential exposures and risks to a representative suite of animals (mysticetes, odontocetes, pinnipeds, sea turtles, and fishes). Such procedures have become standard components of FEIS documents in which noise impacts are of concern.

Scheduling of Pile Driving. In the development of the FEIS, careful attention must be given to the scheduling of pile driving with respect to periods of peak use by marine mammals and turtles. Permit conditions should require that pile driving should be scheduled only during time periods when the probability of marine mammals and sea turtles in the area is low.

Acoustic underwater monitoring. The permit should require that a simple, distributed network of underwater acoustic monitoring stations be in operation

throughout construction, operation and decommission phases of the project. This network should at least be used to: (1) increase the probability of detecting and identifying marine mammals in the area, and (2) to monitor acoustic signal strength due to pile driving and (3) to halt operations if sound levels exceed the threshold at the perimeter of the exclusion zone or if rare or endangered species enter the area. It is not sufficient to rely on previous observations that animals often avoid areas with noise sources and then to assume that there will be no animals in the area during noise producing activities. It would be beneficial from many viewpoints for the Project to install, maintain and utilize a network of in-air and underwater sensors to monitor project activities. The in-air network would include calibrated microphones, accelerometers, anonometers etc. The underwater network would include calibrated hydrophones, current meters, particle counters, pyrometers: basically, sensors to provide data on energy distribution or environmental proxies that are influenced by the wind farm's installation or operational activities (e.g., turbidity, noise, suspended particles). It could also become a component in a larger network of environmental monitoring along the eastern seaboard. This network, taking shape under various guises (e.g., ocean observatories, homeland coastal security, littoral monitoring systems), is already emerging within several different agencies and institutions. Partial funding to assist in this acoustic monitoring might be available from these agencies and from the U.S. Department of Energy.

III. AVIAN IMPACTS

The Project's potential avian impacts present the most challenging and complex issues presented in the DEIS and by the Project. As an initial matter, as the DEIS discusses, evidence from land-based wind turbines indicates that bird mortality from

wind turbines is usually small, and not sufficient to harm populations. For the sake of comparison, data combined for all of the United States indicates that mortality due to wind turbines is much less than that attributed to glass windows, domestic cats, or hunting, each of which produces over a million bird deaths per year. However, wind turbine bird impacts vary from site to site and from species to species. Inappropriately sited wind turbines, such as the Altamont Pass project in California, can kill significant numbers of birds. Evidence from European off-shore wind projects is inconclusive. At one site near the Wadden Sea in the Netherlands, 14 to 50 bird deaths per year per turbine were observed, and most of these were water birds, including many sea ducks.[15] A 2003 review report for two Danish offshore wind farms, Horns Rev and Nysted (80 and 72 turbines, respectively), while not quantifying bird mortalities, provided cautious initial indications based on limited data that birds are adopting migration behavior that avoids collision with the turbines by either avoiding the wind farm or flying in the corridors between turbine rows.[16]

Adding to the complexity of the issue, as the DEIS correctly concludes, the fossil fuel-generated electricity that the Project will displace has a high and well documented impact on habitat used by birds and other wildlife. For example, the population of the sea bird that is most abundant in Nantucket Sound, the common eider, underwent a massive population crash in Massachusetts during World War II in response to an oil spill.[17] Spills of oil being transported for power generation continue to be a major source of

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[15] Winkelman, 1995.

[16] Review Report 2003, The Danish Offshore Wind Farm Demonstration Project: Horns Rev and Nysted Offshore Wind Farm (Sept. 2004) at 36, 94.

[17] Burnett and Snyder, 1954.

water bird mortality. For instance, in April 2003, the spill from the *Bouchard No. 120* in Buzzards Bay killed at least 450 protected birds and impacted 90 miles of coastline. The combined scale of this source of mortality is orders of magnitude greater than any documented impact from a wind power facility. The mining of coal, acid precipitation, deposition of mercury and other metals, and global warming are all having serious impacts, on forest habitat, breeding areas in the arctic, loss of estuarine habitat, and impacts to the aquatic life that serves as food for so many birds.

Given the site specific nature of wind turbine impacts on birds, it is crucial to have a full understanding of the Project's impact on the numerous and important bird populations that are found in Nantucket Sound, particularly the endangered Roseate Terns, and to ensure that the Project will not jeopardize these populations. There appear to be data gaps, conflicting data and/or different expert opinions about the potential impact of the Project on Roseate Terns. Outstanding questions include the extent to which Roseate Terns regularly transverse the area where the Project would be sited and the height at which they would fly. It is not clear to us whether these issues can be resolved by reexamining existing data, e.g., radar data, or whether additional monitoring and data collection must be performed, and if so, whether any such additional monitoring must be undertaken immediately or whether it can take place post-permit issuance under an adaptive management approach. Our suggestion is that the Corps and the Fish and Wildlife Service immediately convene a group of independent scientists, with input from the developer, other interested stakeholders and their respective science advisors, both to consider these issues and to provide recommendations on what additional steps must be taken to resolve these issues prior to issuance of the FEIS. Because of the importance of

this Project and the importance of making sure that the environmental issues are satisfactorily analyzed and resolved, the U.S. Department of Energy National Renewable Energy Laboratory should be invited to join this process and to provide funding for it. The numerous environmental and public health benefits of the Project warrant a creative approach to resolving the questions that still appear to surround the potential bird impacts posed by the Project.

IV. MONITORING AND ADAPTIVE MANAGEMENT

A well-developed environmental monitoring and adaptive management program will be critical to the success of this project, and should be included in the FEIS. Even with additional pre-construction data collection, it will only be through the deployment of a well developed monitoring program during operation of the turbines that the actual impacts can be fully understood. Monitoring should produce the information required for minimizing impacts through adaptive management and for planning future projects.

The adaptive management scheme that we suggest incorporating into the permit is fully consistent with the Army Corps of Engineers' existing requirements for Section 10 permits. Adaptive management is a concept with which the Corps is demonstrably familiar. Though there is no reference to adaptive management in the regulations governing the grant of Section 10 permits, the Corps has defined the term elsewhere in its regulations. Adaptive management is a major facet of the Comprehensive Everglades Restoration Plan, and is defined in that context as "seeking continuous refinements in and improvements to the Plan to respond to new information resulting from changed or unforeseen circumstances, new scientific and technical information, [and] new or updated modeling..." 33 CFR § 385.3

Although there are no specific regulations on adaptive management for a Section 10 permit, an adaptive management approach is consistent with Section 10's general mitigation requirements, 33 C.F.R. § 320.4(r)(1), which include compensatory mitigation "for significant resource losses which are specifically identifiable, reasonably likely to occur, and of importance to the human or aquatic environment." 33 C.F.R. § 320.4(r)(2). "The nature and extent of mitigation conditions [required] are dependent on the results of the public interest review in 33 C.F.R. § 320.4." 33 C.F.R. § 325, App. B. The adaptive management approach that we advocate is also consistent with the overarching Section 10 requirement that the Corps "ensure that the project is not contrary to the public interest." 33 C.F.R. § 320.4(r)(1)(iii).

Adaptive management is also regularly used by other agencies, including the Fish and Wildlife Service when permitting under the Endangered Species Act, when there is a "data gap" which means that "the long-term effects of implementing" a plan on one or more species cannot be determined. U.S. Department of the Interior, Fish and Wildlife Service, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, and National Marine Fisheries Service, Habitat Conservation Planning and Incidental Take Permit Processing Handbook, (Nov. 4, 1996) *at* http://www.artba.org/public/docs/enviro/articles2/HCP%20handbook.pdf. Rather than denying a permit or simply accepting potential damage to a protected species when there is not sufficient information to project the impact on that species, the FWS requires adaptive management as a condition of the permit – continuous monitoring to determine the actual impact and appropriate mitigation thereof.

A program of environmental monitoring and adaptive management should be developed with the benefit of a scientific advisory board, including academic and government scientists who can help to develop an appropriate set of protocols for data collection and adaptive responses to unacceptable environmental impacts. The FEIS should include a delineation of specific adaptive responses that could be implemented to deal with environmental impacts that are judged to be reasonable possibilities at the chosen site and considering the uncertainties that exist in our ability to predict impacts. Such impacts might include, for example, impact to a particular bird species, where the mortality rate is found to be high. Potential adaptive responses should include the option of short-term shut-downs if it is determined that a shut-down within a particular time window could substantially reduce population-level impacts. A framework for adaptive responses must be developed that prevents abuse of an adaptive management program, and also protects the project operator from uneconomic conditions. A reasonable budget for annual number of days allocated for possible use in shut-down response should be established, and utilized, if necessary, with guidance from the science advisory board and data collected under the monitoring program. The information collected as part of this data monitoring process will be critically important to the consideration of other off-shore wind farms. Thus, it is appropriate to look for additional funding and support for this program from state and federal government sources, e.g. the National Renewable Energy Laboratory. The science advisory committee, or another independent body, should be involved to ensure that data collection is objective and transparent. All environmental data collected from this project, sited on land subject to the public trust, should be made available to the public, in electronic form, in a real-time fashion when possible or with a

minimal delay when necessary for data processing (e.g. not more than two months latency).

The monitoring program should include pre-construction monitoring, monitoring of impacts during construction, and most critically, an effective system for monitoring and adaptive management during wind farm operation.

A carefully planned program of ongoing monitoring and adaptive management of the wind farm must be included in the FEIS, including innovative approaches to sampling so that reliable estimates of environmental impacts can be made during turbine operation. This must include measurement of species-specific mortality rates for birds flying in the rotor swept zone. The monitoring program should be expanded to include two phases of post-construction monitoring. Phase I should be a period of relatively intensive monitoring, during the first five years of the project. During this period, the ecological impacts should be quantified, any unacceptably high impacts identified, and mitigation measures developed and implemented, as needed. The monitoring program should be designed with a number of specific objectives but must also be designed in such a fashion as to increase the likelihood of detecting effects that have not been anticipated (i.e. through monitoring an array of ecological indicators). The data and protocols developed during phase I should be used to set the objectives for long-term monitoring conducted during phase II, with guidance from the scientific advisory board. Protocols used during phase II must be adequate to detect changes in steady state impacts, and provide the information needed for adaptive responses. For example, there may be a particular time window each year when some form of biological impact was demonstrated to be unacceptably high during phase I. Should this be the case, phase II monitoring, and

adaptive management, should include protocols for reducing impact during a specific time window defined by ecological or behavioral criteria.

Essential objectives for monitoring should include: 1) species-specific mortality rates for flying animals in the rotor swept zone; 2) assessment of the behavior of marine mammals around the wind farm; 3) assessment of fishes around the wind farm; and 4) assessment of benthic communities.

CONCLUSION

The environmental standards set for the Cape Wind project will create an important precedent for the future of renewable energy in the United States, so it is crucial us to set the bar in the right place. The air quality, public health and global warming benefits of the Project are significant and beyond rational dispute. It is also axiomatic that in order for the Cape Wind project to move forward, the Final EIS must demonstrate that the project is consistent with protecting marine wildlife and applicable laws. Indeed, Cape Wind should strive to be a model for future environmentally sensitive offshore wind projects. The approach that NRDC sets forth in these comments, if followed, provides the best path to realizing the tremendous emissions and energy benefits of the Cape Wind project while also creating a responsible and positive model for future offshore wind development.

Respectfully Submitted,

Katherine Kennedy
Sarah Chasis
Nathanael Greene
NRDC
40 W. 20th St.
New York, New York 10011
ph: 212-727-4463
fax: 212-727-1773
kkennedy@nrdc.org
schasis@nrdc.org
ngreene@nrdc.org

February 24, 2005

Adams, Karen K NAE

From: Matt Adey [info@capewind.org]
Sent: Thursday, February 24, 2005 2:53 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

004826

I believe I represent the future of America. I am 21 years old and currently enrolled in a four year college in New Hampshire. I learned about capewind a few years back and my support for the project has grown over the years.

I believe that we MUST take advantage of this oppertunity for clean renewable energy. We MUST set the example for the rest of the country and world that we accept this kindof green technology, and that this is truely our future. For our oil supplies are obviously limited, but we will most certanly still need electricity in the many years ahead.

When the pros and cons are lined up side by side it's truely astonishing to me that there can be so much debate on these towers being erected. The aesthetics of the towers should not stop the fact that we will be making our air cleaner and we will be making such a strong statement to the rest of the country.

This is my future. I am 21 years old, the times are changing. We must act accordingly and set the right example for others to follow.

Thank You for reading
-Matt Adey Andover MA

Sincerely,

Matt Adey
4 Gavin Circle
Andover , MA 01810

cc:
Capewind

Adams, Karen K NAE

From: ALLSAFES@aol.com
Sent: Thursday, February 24, 2005 2:54 PM
To: Energy, Wind NAE
Subject: (no subject)

004827

Dear Karen,
Please do all you can to stop the wind farm development.
I personally feel the structures won't hold up to the conditions in the sound. Even Great Point light gave in to the effects of nature with all the planning and maintenance it had.
Navigational concerns for both aircraft and watercraft are important. Fog, malfunctions in lighting and makings, and human error all point to a major accident in the future.
Us humans aren't the only ones with a threat to our lives by these structures. Hundreds of thousands of birds use these waters on a daily basis. At night and in poor weather they will crash into the blades.
The low amount of energy that will be realized from this operation does not balance with all the dangers.
In the future you will be glad you did what you could to stop this development.....please don't have a future where you regret that you allowed it.
Thank you for your time,
Ken Kuntz
allsafes@aol.com
Bx 2922
Nantucket, MA 02584

Adams, Karen K NAE

From: CBAR1580@aol.com
Sent: Thursday, February 24, 2005 2:55 PM
To: Energy, Wind NAE
Subject: (no subject)

004828

Please do not put windmills in beautiful Nantucket Sound. Do not leave an ugly legacy for all who come after us! Your influence will be remembered!

Barbara Gates
225 So. High St.
Denver, Co. 80209

Adams, Karen K NAE

From: jcseibold@aol.com
Sent: Thursday, February 24, 2005 3:03 PM
To: Energy, Wind NAE
Subject: save our sound

C04829

Please help stop the development of public land for private money. Allow my grandchildren the same rights that I have to enjoy the beauty of Nantucket sound.

Sincerely

Jon and Catherine Seibold
44 Sea Meadow Court
Portsmouth, RI 02871

Adams, Karen K NAE

From: Joanne Hynes [joannehynes@yahoo.com]
Sent: Thursday, February 24, 2005 3:05 PM
To: Energy, Wind NAE; anne.canaday@state.ma.us
Subject: Cape Wind Project

C04830

Dear Karen Adams and Sec. Ellen Roy Herzfelder,

We are residents of Osterville, in the middle of Cape Cod. We have kept informed of all the events concerning the Cape Wind Project. Honestly, we cannot believe this project has continued to plague us for so long. We are totally and vehemently against the construction of this sea of wind turbines in the middle of our Nantucket Sound.

It amazes us that there can be so many people against it, and so many reasons why this shouldn't be even considered, and yet it is. We hope you will do the right thing, and not allow this to happen!

JoAnne and Toby Hynes
324 Bridge Street
Osterville, Ma 02655

Adams, Karen K NAE

From: Mikekelly1936@aol.com
Sent: Thursday, February 24, 2005 3:16 PM
To: Energy, Wind NAE
Subject: A Clean Invironment

004831

To Whom It May Concern: I am 100 per cent for Clean Air. Please you this as your criterion when deciding your further steps. A clean environment will win every ones heart and vote! M.K. On The Cape.

Adams, Karen K NAE

From: Peter McNeany [mcneany7@comcast.net]
Sent: Thursday, February 24, 2005 2:56 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I live on cape cod. I love sailing and kayaking on Nantucket sound. I am also a retired engineer with 40 years experience doing studies for the government. I have read the Army Corps of Engineers report and have found it extremely thorough with all major topics of importance addressed. They have reached the proper conclusion. Enough of the rich folks NIMBYism. This is not about saving the precious view for a few. It's about doing what's right for energy conservation and for future generations.
Thank you, Peter McNeany

004832

Sincerely,

Peter McNeany
40 Teal Way
Eastham, MA 02642

cc:
Capewind

Adams, Karen K NAE

From: Richard Gregg [RHGregg@aol.com]
Sent: Thursday, February 24, 2005 2:57 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

Human activity is rapidly heating the planet, creating near-term disruptions and long-term catastrophies for ecosystems throughout the world. Already, the arctic is melting and heat waves and droughts are occuring in different locations. It is time that we drastically reduce our dependence on fossil fuels. Cape Wind offers us the opportunity to have clean, renewable energy. This project deserves support from far and wide.

C04833

Sincerely,

Richard Gregg
68 East Dugway Road
Lenox, MA 01240-2111

cc:
Capewind

Adams, Karen K NAE

From: Helen MacCallum [HMacCallum@eds.edu]
Sent: Thursday, February 24, 2005 2:57 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us; marc@mbreslow.org
Subject: Cape Wind Initiative

C04834

I am a full time graduate student at EDS and registered voter/consituent in Cambridge. Please know I support the Cape wind project.
Thank you.
Helen MacCallum
Student, M.Div. Candidate
Episcopal Divinity School
99 Brattle Street
Cambridge, MA 02138
hmaccallum@eds.edu

Adams, Karen K NAE

From: Eric Packer [epacker@comcast.net]
Sent: Thursday, February 24, 2005 3:09 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004835

Dear Ms. Karen Kirk-Adams:

As both a concerned citizen and also an investment advisor for a National Brokerage firm, I strongly support the the Cape Wind Renewable Energy Project. It is absolutely necessary to start the process of moving away from our dependence on imported oil and environmentally
polluting coal to a clean, renewable energy source. Also it provides us with a new technology , which will provide new high paying jobs in construction, production and research and development.
Sincerely,
Eric Packer

Sincerely,

Eric Packer
18 Brookside Road
Needham, MA 02481

cc:
Capewind

Adams, Karen K NAE

From: mary and michael murray [mmurray02492@yahoo.com]
Sent: Thursday, February 24, 2005 3:17 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004836

Dear Ms. Karen Kirk-Adams:

We are writing in support of the wind energy on Cape Cod. Global warming is happening and we need to embrace these alternative CLEAN energy sources. Thank you to all who have made this happen.

Sincerely,

Michael and Mary Murray

Sincerely,

mary and michael murray
38 fuller rd
needham, MA 02492

cc:
Capewind

February 24, 2005

Karen Kirk Adams
Cape Wind Energy Project, EIS Project Manager
Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

C04837

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office
Anne Canaday, **EOEA No. 12643**
100 Cambridge Street, 9th Floor
Boston, MA 02114

Cape Cod Commission
3225 Main Street
PO Box 226
Barnstable, MA 02630-0226

Comments on the Cape Wind Energy Project

Climate Change Action Brookline (CCAB) is pleased to submit comments on the Cape Wind Energy Project. CCAB supports this project for its ability to provide a significant source of new, renewable energy to the region. We believe the Draft EIS/DEIR/DRI has adequately addressed the issues raised in the Scope, including a review of project alternatives, and that the project should be allowed to proceed to the next stage of review.

CCAB is an organization of citizens who are concerned about the impacts of global warming and are working to address the problem on a local level. Global warming threatens our public health, environment and economy. Immediate action is required to address these impacts. The Town of Brookline is an active participant in the Cities for Climate Protection (CCP) Program. We have committed to substantially reduce our community's contribution to greenhouse gas (GHG) emissions and developed a Local Action Plan on Climate Change that describes policies and programs that will help us reach our goals. We are working within our community and with the Town to implement policies and programs and educate our citizens about the importance of this issue. Efforts include a clean energy requirement for the municipal electricity contract, the purchase of hybrid vehicles for the town fleet, incorporating solar panels and other sustainable design elements into the Department of Public Health building renovation, and education efforts such as Car Free School Day and the Compact Fluorescent Bulbathon campaign.

While we work at a local level to address this problem, we recognize the critical need for state and federal policy makers to acknowledge the problem and take action to address it. Governor Mitt Romney's release of the Massachusetts Climate Protection Plan is a step in the right direction. It commits the state to specific GHG emission reduction targets and includes a commitment to promote new, renewable energy.

The Cape Wind Energy Project will provide meaningful reductions in GHG emissions and can address the growing danger of climate change. It will help us meet growing energy demands without increasing air pollution. It will avoid the significant environmental and health impacts associated with fossil fuel fired power plants. It has the potential to become the largest single source of new, renewable energy in New England and it will help meet requirements associated with the Renewable Portfolio Standard (RPS). In addition, it is consistent with the Massachusetts Climate Protection Plan's stated goal of promoting new, renewable energy resources.

Any project of this size, and particularly one within an area of significant natural resources such as Nantucket Sound, deserves a thorough and rigorous public review to ensure that the project is understood, that its impacts are disclosed and properly mitigated, and that federal and state permits ensure this mitigation will be provided. This review process has met those goals. The DEIS/DEIR/DRI document demonstrates that, overall, the project will benefit our environment, our health, and our economy. It adequately describes potential impacts and demonstrates that they can be adequately avoided, minimized and mitigated. Commitments to mitigation can be addressed further during development and review of the Final EIS/EIR/DRI and project permitting.

Thank you for your consideration of these comments. If you have any questions regarding these comments, please contact me at (617) 482-4242

Sincerely,

Michael Gray
CCAB

Adams, Karen K NAE

From: Robert W. Gilstein [rgilstein@portsmouthri.com]
Sent: Thursday, February 24, 2005 3:13 PM
To: Energy, Wind NAE
Subject: Cape Wind

C04838

Dear Ms. Kirk-Adams,
I would like to voice my very strong support for the Cape Wind project. We cannot go on depending on fossil fuels for energy.
Simple economics says so. Demand increases as supplies dwindle and become less reliable means that energy cost will kill this region soon if energy costs cannot be controlled. Wind is reliable, constant and inexhaustible (unless, of course, the earth stops spinning).
Simply knowing that fossil fuels will run out in the foreseeable future says so.
Simply acknowledging the fact of global warming and pollution caused by fossil fuels says so.
Arguments that the wind turbines can be barely seen on a clear day from the coast are patently absurd. And efforts to produce "clean coal" have been a farce, if only because the cost of emission controls and scrubbers are too high (or it would have happened by now).
It's time to move on to the future. Please approve the Cape Wind project.
Robert Gilstein
62 Tucker Lane
Dartmouth, MA

Adams, Karen K NAE

From: Sihaya Reid [sreid@rwu.edu]
Sent: Thursday, February 24, 2005 3:27 PM
To: Energy, Wind NAE
Subject: Support for Cape Wind

C04839

Dear Karen Kirk-Adams,

I **am in favor of the Cape Wind project** for many reasons. I have spent my entire life in the shadow of wind energy one way or another (literally—my family owned one throughout my childhood, and I now research ways to encourage widespread acceptance and development of wind energy).

1. First, the arguments about sullying the horizon off the island of Nantucket are absurd, especially considering that Nantucket's ecosystem is so fragile that much of it is off-limits to human traffic. Fences won't keep out the pollution spread by fossil-fuel burning plants, toxic rain, etc. Proclaiming Nantucket a protected island out of one side of the mouth and then protesting a wind farm three miles off the coast out of the other because of financial concerns is hypocritical. Those financial concerns only affect the privileged few, and the effects are short-term anyway, as opposed to the decidedly long-term effects of converting to wind energy (or not converting!). I love Nantucket Island just as much as they do, and completely understand the desire to preserve it as a haven of peace and beauty, but it is not right do this at the expense of countless other people just because of certain powerful peoples' visual tastes.

2. Wind turbines are beautiful! Psychologically, they represent clean air and healthy lungs and environments. Visually, the technology is growing by leaps and bounds and they grow ever more efficient, streamlined, and graceful.

3. Of course it's terrible when birds and bats die in the blades. And of course no other sources of energy kill wildlife, right?

4. I don't need to mention the financial and health benefits in detail—the report does a much better job of that than I could. I do think, though, that by being the first state in the US to implement an off-shore wind farm despite the controversy, Massachusetts would set a powerful precedent and touch off a wave of other activity in wind development. The flip of that, though, is that if Massachusetts falters and denies Cape Wind, the precedent will be more difficult to overturn for the next state, seriously impeding the progress of alternative energy development for years to come and subjecting Americans to pay the penalty for many more years in the areas of economy, environment, health, and national security.

Thank you for your time.

Sihaya Reid
Proposal Writer
Office of University Advancement
Roger Williams University
One Old Ferry Road
Bristol, RI 02809

401.254.3327

Adams, Karen K NAE

From: April Brumbaugh [April@svraleigh.com]
Sent: Thursday, February 24, 2005 3:24 PM
To: Energy, Wind NAE; anne.canaday@state.ma.us
Cc: Steve Raleigh; comments@saveoursound.org
Subject: The Cape Wind DEIS

C04840

February 24th, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT
696 Virginia Road
Concord, MA 01742

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
MEPA - MASSACHUSETTS ENVIRONMENTAL POLICY ACT OFFICE
Attn: Anne Canaday, EOEA No. 12643100
100 Cambridge Street, Suite 900
Boston, MA 02114

Thank you for considering my opposition to the Cape Wind Project on Nantucket Sound.

As a commercial General Contractor and master electrician on Cape Cod for 32 years, I understand the need for alternative energy resources, both in terms of research and implementation.

However, I am hard pressed to believe that the best area for this development is in some of the most pristine waters in the world – ie: Nantucket Sound. Especially when over two thirds of the Earth is covered by water and research is very promising that these water wind technologies are equally viable in deep waters.

I am very alarmed that this profitable venture by Cape Wind Associates, LLC is likely to have significant and negative impacts to local recreation, the local fishing industry and local aviation and shipping navigation safety. Also, I am certain that this project will drastically and irrevocably disrupt the marine ecosystem.

Certainly, there is an equally feasible and less detrimental location for this commercially advantageous project by Cape Wind Associates, LLC.

Stephen V. Raleigh
President & CEO
S.V. RALEIGH CORPORATION
Stephen V. Raleigh
President & CEO
5 Mark Lane, 2nd Floor
Hyannis, MA 02601
(508) 778-5001
Fax: (508) 775-4464
E-mail: steve@svraleigh.com
Lic: General Contractor
Lic: Electrical Contractor
Lic. In: MA. NH. ME. VT. & RI.

Adams, Karen K NAE

C04841

From: Alan Zox [aazox1@direcway.com]
Sent: Thursday, February 24, 2005 1:27 PM
To: Energy, Wind NAE
Subject: I strongly support the Cape Wind Project for healthcare reasons

To Whom it Concerns:

I strongly support the Cape Wind Project because the people of New England will save $53 Million annually in health costs and because healthcare will improve in the region. Thank you for the opportunity to express my views.

Alan Zox, Ph.D.
PO Box 307
Prudence Island, RI 02872

Tel. 401.741.7459

Adams, Karen K NAE

From: Eastport Trading [michael@eastporttrading.com]
Sent: Thursday, February 24, 2005 3:30 PM
To: Energy, Wind NAE
Cc: anne.canaday@state.ma.us
Subject: Nantucket Sound Wind Farm

C04842

As a private boater, frequently using the proposed area of the "wind farm", I am very concerned about boating safety. The proposed area is frequently shrouded with fog and with all of natural hazards to boating, all we need is something else to run into in poor visibility. Please reconsider. If this is really a viable plan and the energy produced worth the effort, why did the Bartlett Farms on Nantucket tear down their dozen windmills several years ago. They were located on a private farm, near the septic fields and well away from the population centers of the island. This plan (scheme) is designed to do one thing only, enrich the coffers of the wind farm company. I dont see that it is your job to assist them in that regard.
Sincerely,

Michael Schermerhorn
Vice President Engineering
Eastport Trading Co.
Phone: (508) 533-8800 Fax: (508-533-8488)

Adams, Karen K NAE

From: Janie Booth [jmcogen@yahoo.com]
Sent: Thursday, February 24, 2005 3:26 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

C04843

Dear Ms. Karen Kirk-Adams:

Please support Cape Wind. Renewable energy is an important step toward energy independence and environmental sustainability. Do not let special interest groups prevent this project from going forward!

Sincerely,

Janie Booth

Sincerely,

Janie Booth
2530 Lafayette
Davis, CA 95616

cc:
Capewind

Adams, Karen K NAE

From: Taf Schaefer [tafschaefer@comcast.net]
Sent: Thursday, February 24, 2005 3:29 PM
To: Energy, Wind NAE
Subject: Cape Wind windfarm in Nantucket Sound

004844

Dear Army Corps of Engineers:

I am writing to express my grave concerns regarding this project. I DO NOT think the wind farm it is a good idea.

Granted, we need to find alternative energy sources that make sense and we need to lower car emissions and increase our conservation of available energy. But, wind towers have not proven to be a safe energy alternative that comes without many negative results.

Cape Cod is a magical place and Nantucket Sound is one THE focal points of its aesthetic, cultural, economic and natural foundations. To propose placing huge towers that will endanger birds and fish, destroy the visual beauty of a pristine body of water, destroy the tourism upon which the Cape bases its economy and to place thousands of gallons of oil just waiting to be spilled in a valuable natural resource without a measurable benefit to the environment of Cape Cod and its inhabitants is FOLLY.

Apparently the "scientific studies" that were done and rammed down the public's throat were mostly devised by consultants paid by Cape Wind itself. "The Oil Spill Trajectory Map" has not been done and having all that oil sitting right offshore seems like a disaster waiting to happen. Who would be responsible if an large oil spill did happen? Are the taxpayer's and citizens who are being asked to accept a blight on their landscape and a usurping of their stewardship of public lands going to be left holding the bag when a disaster hits or when Cape Wind finds that they cannot service their turbines or they don't reap the profits they are expecting and then bail out. Many of the wind farms in Denmark and elsewhere have not lived up to their potential and have been discontinued. Will Cape Wind be responsible for the entire life span of the windfarm. In my experience, private companies that seek to reap the benefits from public lands and resources so often leave the clean up of environmental disasters they cause or leave failed enterprises to the taxpayers for a bail out.

I am also outraged by the prospect of a private company reaping huge financial gains from the bounty of public waters and natural resources. How is that this privately held company has gotten this far with this proposal when virtually all the inhabitants of Cape Cod and all the agencies and towns are against it. And, the electricity that is generated by these towers will not even be allocated for Cape Cod. Does Jim Gordon and Cape Wind have more of a right to our jointly held environment than we, the citizens of the earth. How does one person rise to far above all others? Jim Gordon and Cape Wind do not get to rape Nantucket Sound.

I do not think this is just a case of the "Not in my Backyard" syndrome. If everyone were to benefit, and if the environment were not so threatened, and if the aesthetics of a national treasure were not so pure, and if the fishing industry and the tourism industry were not destroyed in the process, then maybe wind towers might be good, but there has to be a better way or a better place or a better financial package that is not just for the benefit of one private company, to

make this a viable and acceptable proposal.

The Army Corps of Engineers, being part of a government that is of, by and for the people should not continue to push a proposal that is unacceptable to the people of Cape Cod and Massachusetts and is unacceptable to the town governments, and the business community and the fishing industry and the Chamber of Commerce and the environmental groups and the wildlife groups and the public media and the Governor and the children who will pay the ultimate price for the coming ruin we will face if this project goes forward.

Yours truly, Catherine Schaefer, designer and sculptor born and raised on Cape Cod and citizen of the world.

Adams, Karen K NAE

From: chris hoch [chrishoch45@hotmail.com]
Sent: Thursday, February 24, 2005 3:31 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004845

Dear Ms. Karen Kirk-Adams:

As a manufacturer of cellulose insulation in western MA, we are very interested in saving energy costs. The Cape Wind project is a great opportunity to demonstrate that we as a country are not only prepared to try new energy generation alternatives but also capable of garnering public support for saving energy. Many of those opposed to this project are hypocritical, in that they claim to be in favor of reducing our dependence on fossil fuels, yet for misguided, selfish reasons, they are opposed to this project. The windmills pose no proven threat to the environment, and I personally feel that the windmills are attractive. There is no disputing that they will generate clean, efficient, and economical energy, and I strongly endorse this project.

Sincerely,

chris hoch
50 depot street
belchertown, MA 01007-9619

cc:
Capewind

Adams, Karen K NAE

From: Psilos Christos H NPRI [PsilosCH@Npt.NUWC.Navy.Mil]
Sent: Thursday, February 24, 2005 3:30 PM
To: Energy, Wind NAE
Subject: Cape wind

C04846

Dear Karen Kirk-Adams

Please note that I am in favor of Cape wind because it is a way to show we Love our children, grand children and Grand parents. Pollution mostly affects the young and elderly and it is our responsibility to protect them from immediate and long term dangers. There may be other options available, this option is possible and available today.

I have seen the wind mills on the beautiful Island of Lesvos , Greece, and in my opinion and others I have discussed the windmills with, they enhance the natural beauty. The technological nature of the windmills does not take away from natures beauty, the windmills blend harmoniously with the Greek Island terrain, they provide a very natural, pleasant presence .

v/r chris

Electrical Engineer

Adams, Karen K NAE

From: William Morgan [divineprovidence@verizon.net]
Sent: Thursday, February 24, 2005 3:33 PM
To: Energy, Wind NAE
Subject: Cape Wind Energy

C04847

I am in favor of the Cape Wind Energy Project for many reasons:

Environmental

Energy

Aesthetics

Common Sense

Health

William Morgan
24 Orchard Place
Providence, Rhode Island 02906

Adams, Karen K NAE

From: Amelia Amon [amon@together.net]
Sent: Thursday, February 24, 2005 3:40 PM
To: Energy, Wind NAE
Subject: Support for Cape Wind

CC4843

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

Dear Karen Kirk-Adams,

I am strongly in favor of the Cape Wind project because global warming is the most difficult and threatening problem facing mankind at this time. Disruption of our weather patterns will be destructive to the ecological and atmospheric systems that sustain us.

Wind generation of energy will also increase our national security by reducing our dependence on foreign oil supplies, will keep our children healthier by replacing coal-burning power plants, and will encourage public awareness and support for the development of other renewable energy technologies.

Studies from wind installations in Scotland, Australia, California, off the shore of Denmark and Sweden, show increased tourism -providing evidence that people find them attractive additions to the landscape.

Thank you for your consideration,
Amelia Amon

--

Alt.Technica
242 E 19th St
NY, NY 10003
1 212 260 0806
www.alt-technica.com

Adams, Karen K NAE

From: Rachel Ingersoll [rachandlily@yahoo.com]
Sent: Thursday, February 24, 2005 3:36 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004849

Dear Ms. Karen Kirk-Adams:

As a concerned citizen of the United States, I urge you to support the Cape Wind project. Clean, renewable energy sources are vital to the health of the planet and to our country's energy independence. Please consider the findings of the Draft Environmental Impact Statement and support this important project.

Sincerely,
Rachel Ingersoll
Denver, Colorado

Sincerely,

Rachel Ingersoll
879 South Vine Street
Denver, CO 80209

cc:
Capewind

Adams, Karen K NAE

From: Jana Hesser [JanaH@doh.state.ri.us]
Sent: Thursday, February 24, 2005 3:35 PM
To: Energy, Wind NAE
Subject: In Favor of Cape Wind

Dear Karen Kirk-Adams,

004850

I am strongly in favor of the Cape Wind project (and alternative renewable energy in general) because it will decrease dependence on foreign oil, decrease electric costs in New England, and remove pollutants from the air which adversely affect the health of everyone in New England, especially children. I also find the windmills pleasing to look at and understand that in other countries they have become a tourist attraction so maybe they will also help boost the local economy!

Sincerely,

Jana Hesser
15 Paradise Brook Farm Rd.
Middletown, RI 02842

Adams, Karen K NAE

From: Ken Marien [kdmariens@aol.com]
Sent: Thursday, February 24, 2005 3:40 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004851

Dear Ms. Karen Kirk-Adams:

Everyone who is against clean renewable enegy that does not rely on foreign energy sources please stand up to be counted.

I DO live with a wind turbine in by backyard and I would like to see more of them.

I don't have to strain my eyes from shore or go out in my Yacht, as they are at the base of Wachusett Mountain between the Audobon property and the State park, and they are not an eyesore, but an object of attention and attraction for most who view them.

Sincerely,

Ken Marien
179 East Road
Westminster, MA 01473

cc:
Capewind

Adams, Karen K NAE

From: Dan Leslie [pipsygirl_9@hotmail.com]
Sent: Thursday, February 24, 2005 3:39 PM
To: Energy, Wind NAE
Subject: Nantucket Sound Wind Farm Power Plant

004852

To Whom It May Concern,

Thank you for the opportunity to express my opinion on the proposed power generating plant for the waters of Cape Cod. I'm very much in favor of wind power and other alternative energy sources. However, it's nearly incredible that Nantucket Sound is even being considered as a location. Just incredible. And for private gain.

Nantucket Sound is absolutely not the place for a power plant.

Dan McCarthy

Adams, Karen K NAE

From: Allan Hutchinson [allanh62@hotmail.com]
Sent: Thursday, February 24, 2005 3:42 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

C04853

Dear Ms. Karen Kirk-Adams:

I remember a time when the Cape was a truly beautiful place in nearly all it's entirety. A time when from the water one was able to view a barren shore in it's natural splendor. This beauty attracted people desiring to live on those shores, and as result the aesthetics have been changed, if not diminished. It is sad to think that some would be so selfish as to feel that now that they are there, further development must stop. This view does not take into consideration how those before them felt about progress. Yes, things change, like it or not. And exactly where the line is drawn deserves consideration. One can only hope for an objective evaluation of all aspects as to how many benefit and for how long. There are times when the greater good calls upon the few to make sacrifices. I believe that the Cape Wind project is for the greater good, and now is past the time.

Sincerely,

Allan Hutchinson
Kings Hwy
West Springfield, MA 01089

cc:
Capewind

Adams, Karen K NAE

From: Kimberly Cullinane [ashtonkimberly@hotmail.com]
Sent: Thursday, February 24, 2005 3:43 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I am writing as a citizen of the Commonwealth of Massachusetts, interested in environmental responsibility and energy security. I strongly support the Cape Wind project and firmly believe that it is in the best interest not only of the Commonwealth, but of our nation. Of all of the renewable energy electricity generation options available, large wind electricity generation projects are the most cost-effective - nearly comparable to fossil fuel costs on a dollar per kilowatt hour basis. This country needs to not only pay lip service to, but actually act on opportunities to use renewable energy.

004854

Now is the time to support renewable energy in the United States. Can you imagine a day when the United States no longer has an economic interest in the Middle East? Can you imagine a day when we no longer need military bases in the Middle East to protect our oil interests? These things certainly would not happen for a very long time, but they will never happen if we don't start to look now for opportunities to generate our own electricity and reduce our dependence on foreign oil.

The Army Corps of Engineers' report on the proposed wind farm indicates that the only real issue is aesthetics. It is no surprise, therefore, that the vast majority of this project's opponents are wealthy landowners on the coastal Cape, including Senator Ted Kennedy. While the view shed issue is real and should be discussed openly and honestly, it seems to me that anyone concerned about the greater good would admit that the benefits of the wind farm far outweigh its costs. Benefits include taking a step toward greater energy security, sending a signal to the rest of the country that wind power is possible, taking action to mitigate climate change, and acting in an environmentally responsible and appropriate manner. Opponents of this project cite many potential costs, but the only one that the opposition's framework truly rests on is aesthetics. I can't imagine saying I'd rather see a power plant belching smoke than a wind turbine spinning in the breeze. Would you rather look at the Salem power plant or the wind turbine in Hull?

One final comment about politics. The political maneuvering behind the scenes on this issue is apalling - truly. Though I worked in Washington, DC for many years, I am still not numb to political actions that are clearly not in the best interest of voters, but only in the best interest of the politicians - asking Senators from other states to introduce backdoor amendments in Congress that would kill the project, and now, seeking to change the definition of the border of Massachusetts to kill the project. It's truly disgusting. Why not let the project stand on its merits and let the people decide. Let's have a referendum on this issue and see what happens.

Better yet, please just support the Cape Wind project. It is important for energy security, it could be represented as a first step on climate change, and it's the right thing to do.

Sincerely,
Kim Cullinane

Sincerely,

Kimberly Cullinane
350 North Street
Boston, MA 02113

cc:
Capewind

Adams, Karen K NAE

From: Alan Storms [A.D.Storms@worldnet.att.net]
Sent: Thursday, February 24, 2005 3:53 PM
To: Energy, Wind NAE
Subject: Cape Wind Project

004855

Dear Karen Kirk Adams,
I am voting for the acceptance of the Cape Wind Project on Nantucket Sound.
1-It is the first viable wind farm in New England.
2 - It will help power diversity
3 - It will not produce green house gases, nor increase global warming
4 - It is a natural site for a wind farm

Alan D. Storms
401 253-9477

Adams, Karen K NAE

From: kchace [kchace@charter.net]
Sent: Thursday, February 24, 2005 3:47 PM
To: Energy, Wind NAE
Subject: Support for the Cape Wind project

004856

I would like to voice my whole hearted support for the Cape Wind Project. I believe it is very important that we do everything in our power to reduce our dependence on fossil fueled power production.

Sincerely,

Kenneth M. Chace

Adams, Karen K NAE

From: Carl and Nora Hevert [chevert@gis.net]
Sent: Thursday, February 24, 2005 3:48 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

Sincerely,

Carl and Nora Hevert
24 Seamist Drive
POBox 1254
East Orleans, MA 02643

004857

cc:
Capewind

Adams, Karen K NAE

From: Brent Putnam [m0rdac@myrealbox.com]
Sent: Thursday, February 24, 2005 3:53 PM
To: Energy, Wind NAE
Subject: Cape Wind Energy Project

WindfarmACoE022405.doc

97 John Parker Road
East Falmouth, MA 02536
February 24, 2005

004853

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742-2751

Re: DEIS for Cape Wind Associates

Dear Ms. Adams;

I have been following the Cape Wind Associates proposal to build a windfarm on Horseshoe Shoal since it was first announced, and so am quite familiar with all the details of the proposal as well as the opposition's arguments against it.

And so when I sat down to write this letter, I thought about the various things I could say – I could detail the benefits of the windfarm, or address the issues that have been raised by the opposition but in truth, there is very little that I can say now that has not been said before by someone, somewhere. So I will keep this simple.

Give the green light to allow Cape Wind to build the windfarm. The DEIS clearly shows what everyone has known for a long time now; that wind is probably the most benign way to generate electricity and the benefits far outweigh the costs. Whatever concerns remain can be addressed without further delaying the project.

Sincerely,

Brent Putnam

97 John Parker Road
East Falmouth, MA 02536
February 24, 2005

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742-2751

Re: DEIS for Cape Wind Associates

Dear Ms. Adams;

I have been following the Cape Wind Associates proposal to build a windfarm on Horseshoe Shoal since it was first announced, and so am quite familiar with all the details of the proposal as well as the opposition's arguments against it.

And so when I sat down to write this letter, I thought about the various things I could say – I could detail the benefits of the windfarm, or address the issues that have been raised by the opposition □ but in truth, there is very little that I can say now that has not been said before by someone, somewhere. So I will keep this simple.

Give the green light to allow Cape Wind to build the windfarm. The DEIS clearly shows what everyone has known for a long time now; that wind is probably the most benign way to generate electricity and the benefits far outweigh the costs. Whatever concerns remain can be addressed without further delaying the project.

Sincerely,

Brent Putnam

Adams, Karen K NAE

From: Stephanie L. Allen [stephanie@allenpavlides.com]
Sent: Thursday, February 24, 2005 3:55 PM
To: Energy, Wind NAE
Subject: For Cape Wind

C04859

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

Dear Karen Kirk-Adams,

The installation of the Cape Wind project is a must for New England and a step in the right direction for the US. This technology will reduce our reliance on the importing of fossil fuels or burning of coal, minimizing the risk of oil spills that permanently damage the environment and reducing the harmful toxins that are released into the atmosphere upon the burning. The benefits to the environment as well as the benefits to the local economy with jobs for the creation and the maintenance of the 130 turbines are reason enough to support this endeavor but the yet to be imagined benefits is the exciting part. To imagine that we may watch the shift in public awareness and see the enormous oil machine economy grind to a halt not because the oil has run dry but because we choose to find clean and renewable ways to energize our environment. The 130 slow turning wind sculptures will not be the eyesore that some may want us to see, but instead will be a daily reminder of our commitment to future generations.

I write this in full support of Cape Wind and with bated breath.

Stephanie Allen Pavlides

Adams, Karen K NAE

From: Thomas Bourgeois [tombourge@prodigy.net]
Sent: Thursday, February 24, 2005 3:54 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

C04860

As a professional in the energy and environmental field I would like to express my support fot the Cape Wind project. I have read some, certainly nowhere near all, of the competing analyses. It seems clear that the benefits of a project of this type greatly outweigh some of the concerns that have been expressed. It is important that the United States build projects of this sort that can generate clean power at a reasonable price, and with apparently very little damage to the environment

Sincerely,

Thomas Bourgeois
9 Jared Drive
Mendham, NJ 07945

cc:
Capewind

Adams, Karen K NAE

From: Gregory Anderson [greg_a@comcast.net]
Sent: Thursday, February 24, 2005 3:55 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

C04861

I am writing to voice my strong support for Cape Wind's proposed Horseshoe Shoal windfarm project. I love every facet of the project, but most importantly, what a project like this would mean for the environment. There are many reasons why the windfarm proposal is a great idea - if approved, the project will mean new jobs for the region. It will begin the process of weaning ourselves off carbon-based (and finite) energy sources in New England, which will result in less dependance on foreign oil and would also lessen the necessity for oil-drilling in pristine areas - ANWR in Alaska for example.

But the largest benefits the region would reap, in my opinion, are environmental. Ultimately, the world will run out of oil and gas - no one debates this, but the Earth's population is only going to increase, which will run us out of oil and gas that much faster. Plenty of coal will be left, of course, but when burned, coal releases sulfers and carbons on a much greater scale than even other fossil fuels.

The solution will need to be "alternative" sources of energy - and if starting now isn't a good idea, when is? The geographic location of Cape Wind's proposed winfarm is ideal for harnessing wind energy, and for doing it consistently. It is estimated the windfarm could power up to three-quarters of the Cape and would result in the release of tons and tons fewer greenhouse gases into the atmosphere.

The use of alternative energy will cut down on the region's dependance on coal/oil/gas-fueled power plants, that must have the fuels transported to them (also resulting in pollution from motor vehicles) which can sometimes result in fuel leaks and spillages, ranging from relatively minor to massive, and are costly both environmentally and financially. The full impact that the April, 2003 Buzzards Bay oil spill had on sea fowl and other marine life is not known but few people who saw the damage will forget it.

People who choose to criticize what wind turbines look like should be reminded of the unsightliness of smokestacks and oil-coated birds. One should also consider how much clearer the air on the Cape could be if a large clean-energy project were built there - and remember that not only will one be able to appreciate looking out to sea that much more, but the air we breathe will be that much cleaner - a major health benefit for the general public.

I am highly in favor of this project and hope that Cape Wind receives the permits and the "go-ahead" that it needs. The project will translate into so many good things to so many people. Politicians at the state level and nationwide should get behind this project and prove just how important a step this is to take, for the region, country and even the world.

Your help is needed to get this project "off the ground." Please give this windfarm proposal your full support!

Sincerely,

Gregory Anderson
6 Canal St
Wilmington, MA 01887

cc:
Capewind

Adams, Karen K NAE

From: donna bonin [angelsiddha@hotmail.com]
Sent: Thursday, February 24, 2005 1:51 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I support clean, renewable energy. Please, lets take care of our environment! It's the only one we have.

004862

Sincerely,

donna bonin
195 East Broadway
Haverhill, MA 01830

cc:
Capewind

Adams, Karen K NAE

From: Susanne Hale [shale@pubpol.umass.edu]
Sent: Thursday, February 24, 2005 1:52 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004863

Dear Ms. Karen Kirk-Adams:

I am writing to express my strong support of the Cape Wind project. The environmental impact statement was extremely thorough and complete. It is time now to launch the project and to begin the supply of clean energy to the Cape and to the region. Cape Wind is the flagship of New England's energy future.

Sincerely,

Susanne Hale
133 Shutesbury Road
Pelham , MA 01002

cc:
Capewind

Adams, Karen K NAE

From: Conca, Karen RDECOM (PKI) [Karen.conca@us.army.mil]
Sent: Thursday, February 24, 2005 2:01 PM
To: Energy, Wind NAE
Subject: Cape Wind Energy Project

C04864

I favor the Nantucket Sound Wind Farm because we cannot continue to use up our natural non-renewable (within our lifetime) resources. Not only because of the damaging effects to the environment if we continue on our current course, but because wind and solar power are renewable, and present relatively low impact on the environment.

Karen R. Conca

Senior Food Technologist

508 233-5185

Adams, Karen K NAE

From: SANFORD KENDALL [carolsmith88@msn.com]

Sent: Thursday, February 24, 2005 2:03 PM

To: Energy, Wind NAE

Cc: john_kerry@kerry.senate.gov; senator@kennedy.senate.gov; roleary@senate.state.ma.us; rep.ericturkington@hov.state.ma.us

Subject: wind farm

004865

To whom it may concern:

I am in favor of the wind farm but have the following concerns:

Ambient light from the windmills: It is important that this not look like a big shopping mall in the ocean, causing a dull haze of yellow glow over the sky. We value the dark skies here and want to protect them. Development in other areas across the country has allowed the total loss of sky, resulting in what appears to be a yellow film covering entire communities. Perhaps some people don't care about the loss of the night sky but we on Nantucket treasure it and want to keep it.

Governing Laws: Massachusetts will be impacted the most by this wind farm. It is important that Massachusetts has a say in the laws that govern this wind farm. Wind Energy Project seems to be trying to avoid involvement of state government and I think that is wrong. In the news today, the federal gpvernment has allowed Massachusetts to redraw the boundaries in Nantucket Sound. This will allow for more Massachusetts control which I am in favor.

Our representatives would be more productive by working on regulations to make the project effective rather than simply telling the wind farm to go away and find another place. The wind farm will be a tremendous asset to the Commonwealth of Massachusetts with job growth, energy savings, and development of technology of the future. **All positives**. It is a relief to have an industry to consider besides one that is related to our military! I have lived here for 25 years and I love Nantucket and Cape Cod. I agree that Nantucket Sound is our "playground and our beautiful, unque place to nourish our minds, bodies, and souls, but I do not believe it will affect tourism in a negative way nor will boating and water sports be adversely affected. I am willing to make a small change in my life for the greater good the wind farm will bring.

Thank you for your consideration of my comments.

Sincerely,

Carol B.Smith
8 Roberts Lane
Nantucket MA 02554

Adams, Karen K NAE

From: carter page [cpage11@yahoo.com]
Sent: Thursday, February 24, 2005 2:05 PM
To: Energy, Wind NAE; anne.canaday@state.ma.us
Subject: Comments on Cape Wind Project

004866

Dear Mrs. Karen Kirk-Adams and Secretary Ellen Roy Herzfelder,

As I write to you on the eve of the deadline for comments on the DEIS for the Cape Wind Project, I find myself shocked and appalled that this letter is even necessary. I have postponed sending my comments because I believed that the wind farm proposal would be rejected. Now, as the proposal has continued to be explored I am compelled to try and refocus those involved in this process with a heavy dose of reality. In the following paragraphs I will outline a few of the major reasons why the DEIS is not only an inaccurate document, but one that is completely irresponsible as well.

Nantucket Sound is not for sale. Behind this catch phrase is a sound message. Private companies may not take public domain for free, and profit on it. We should be protecting this majestic sound not giving it away for free, or more aptly, considering all the subsidies, paying someone to take it. The precedent that this land grab is setting is worth serious consideration.

The location chosen for this project is absurd. Nantucket Sound is a national treasure in the sense of its beauty and home to animal life. Why does experimenting with wind energy rank higher than protecting whales and birds? The DEIS does not accurately portray the risk to birds, or even to navigation. Why would a wind farm be built so far from a city, and in place that is not having an energy crisis but actually has excess power?

The cape's economy relies heavily on fishing and tourism. The wind farm would turn this vacationland into an industrial park. The number of jobs that would be lost, and the economic depression that the cape residents would suffer is unfathomable. The cape's employers are not manufacturing plants or large corporate companies, many of us rely on the beaches and the ocean to provide our jobs. By taking those jobs away, families that have relied on fishing and tourism for generations would have to leave the cape. It is difficult already to work on the cape, I cannot imagine there being even less jobs available.

Watching and reading about this process has been enlightening. I have learned that if you throw enough money out there, anything can happen. The DEIS uses research from Cape Wind. So, not only is the research limited in scope, it is also biased. If the report is not even substantiated with thorough independent

research, is it even worth reviewing at all? And what about the flawed permit process? The Army Corps cannot grant property rights, especially when a federal policy for offshore wind energy does not even exist. And what about holding the public hearings in the winter, when less than half of the cape homeowners are even here? The public comment should be extended and there should be more hearings in the summer. Who are the Cape Wind investors, what is their business plan?

I consider myself an environmentalist, but I am also a realist. The power generated by wind turbines is unreliable at best and the sacrifices needed to even create that power are great. The risk to wildlife and the economy of the cape is too much to gamble for the uncertain prospects of the wind farm. Releasing our country from the chain of foreign oil dependency is a priority that should be met with exploration and ingenuity. It should not, however, seek to turn an ocean sanctuary into an industrial plant that demands an unfair burden on the residents of that sanctuary, the animals and people.

Thank you,

Carter Page

Adams, Karen K NAE

From: RBrand8047@aol.com
Sent: Thursday, February 24, 2005 2:37 PM
To: Energy, Wind NAE
Subject: Wind Mills

004867

We want to vehemently say how strongly we oppose a windmill factory in Nantucket Sound.

Richard Brand
80 Edge Hill Road
Hyannisport, MA 02647

Adams, Karen K NAE

From: LLorant [LLorant@umassd.edu]
Sent: Thursday, February 24, 2005 2:25 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: Cape Wind

At the MIT hearing, I submitted my remarks on the Cape Wind project by placing

004868

a copy of my remarks in the box designated for that purpose.

In addition, today, Feb. 24, I am mailing additional testimony in favor of the project to you.

Thank you,

Laurie Robertson-Lorant, Ph. D.
So. Dartmouth, Mass.

Adams, Karen K NAE

C04869

From: Kathy Colon [kcolon@pubpol.umass.edu]
Sent: Thursday, February 24, 2005 2:37 PM
To: Energy, Wind NAE
Subject: Please support clean enery

I am writing to express my strong support of the Cape Wind project. The environmental impact statement was extremely thorough and complete. It is time now to launch the project and to begin the supply of clean energy to the Cape and to the region. Cape Wind is the flagship of New England's energy future. Please help us to support wind power over fossil fuel.

Thank you.

Kathy Colon
220 Long Plain Rd.
South Deerfield, MA 01373
kcolon@pubpol.umass.edu

Adams, Karen K NAE

From: Ben Houghton [houghtb@allegheny.edu]
Sent: Thursday, February 24, 2005 2:41 PM
To: Energy, Wind NAE
Subject: nantucket wind farm

004870

Mrs. Karen Kirk-Adams,

I am writing in support of the wind farm in Nantucket Sound. I grew up in the community of Woods Hole and have lived on Cape Cod for 23 years. I live 10 minutes away (by foot) from the Shining Sea Bike Path that runs from Woods Hole to Falmouth and from where you can see Martha's Vineyard and Nantucket Sound. Cape Cod is my home for all 12 months of the year. I stay here because the towns have character and because the surrounding scenery, the beaches, and the ocean are all beautiful. I'm proud to have grown up in a place like this.

I know that many people, who are also proud of Cape Cod, are angered by the idea of private development in Nantucket Sound. These people are primarily angered for reasons of aesthetics. Cape Cod is a beautiful place but I don't see it as an exception because of this. From the artistic renderings that I've seen this will not impact my life in the least. It's not going to destroy a trip to the beach or a short sail out of the harbor. If anything it will give me a feeling that my community is doing its part to prevent global climate change. I am much more concerned with my health and the global balance than with a clear view out into the ocean. It's great that our country is beginning to generate energy from alternative sources anything that frees us from our dependence on foreign oil!

On another note, I think its interesting how higher percentage levels of toxic waste dumps and heavy polluting industries are located in lower income and minority communities. Yet, here in a very affluent region, we fight against a completely clean energy source. I think that's backwards and borderline selfish. Thanks very much, Ben Houghton

Ben Houghton
316 Woods Hole Rd.
Falmouth, MA 02540

Adams, Karen K NAE

From: Debi James [debi@leonardagency.com]
Sent: Thursday, February 24, 2005 2:41 PM
To: Energy, Wind NAE
Subject: FW: opposition to the Cape Wind Power Plant

004871

Cape Wind mess.doc IMG_2367.JPG IMG_2374.JPG IMG_2370.JPG

Karen-
Enclosed are some supplemental pictures of the beautiful coastline - even in winter that will be completely destroyed by these Wind Power turbines.
Thank you;
Debi James

-----Original Message-----
From: Debi James [mailto:debi@leonardagency.com]
Sent: Thursday, February 24, 2005 2:38 PM
To: Karen Adams
Subject: opposition to the Cape Wind Power Plant

Dear Karen-
Enclosed is a letter to you including some of my thoughts on the proposed Cape Wind Power Plant. Please read this letter along with all of the letters and information from informed citizens on the inappropriateness of this Power Plant in Nantucket Sound.
I do not know of a single person who is informed with the actual facts of this proposal who is in favor of it.

Thank you very much for your consideration.

Debi James
Leonard Insurance Agency
Ph (508)428-6921
Fax (508)420-5406
email: Debi@LeonardAgency.com

February 21, 2005

Cape Wind Energy Project EIS Manager
Karen K. Adams
Regulatory Division
696 Virginia Rd.
Concord, MA 01742-2751

Reference file #NAE-2004-338-1

Dear Karen;

It is absolutely appalling to me that these Cape Wind people have been allowed to go this far in the process of turning our National waters into a private power plant. You cannot allow this power plant to be built in the middle of beautiful Nantucket Sound. The damage that this Power Plant will cause to the environment is irreversible and irretrievable. Please no not allow this mess to happen.

Cape Wind Power plant has hired very crafty marketing people who are creative with the use of statistics and are very creative in the twisting of facts. They have been able to twist, delete, and very selectively allow "facts" to be known to the general public. However – anyone with the most basic of statistics knowledge and marketing know how should be able to see through this. The Draft Environmental Impact Statement has clearly been strongly influenced by those who are on the payroll of the Cape Wind Power Plant.. It is not a fair evaluation, it is inadequate! Again, the facts have been twisted to try to show that this power plant is a great thing. There is absolutely NOTHING positive about this proposal.

Where to even begin with contradicting the misleading information that the Cape Wind Power Plant people are trying to shove down the throats of the uninformed? If the antiquated technology works at all, it will supply minimum power to the grid. The technology is old, and has not proved itself to be a positive thing anywhere else that these hideous towers have been erected. The fossil fuel that is needed to power these monstrosities has conveniently been left out of discussions. The fuel spill resulting from storm damage to these towers would be horrible. I find it disgusting that the proponents of this Power Plant even bring up how bad oil spills are when a tanker runs aground. Of course those incidents are awful! We all agree on that. But – since this Power Plant in the middle of Horseshoe Shoals will not begin to decrease the amount of oil needed – it should not really be brought up. Once again – the Cape Wind People are hoping that when they mention how bad an oil spill is – the uninformed public will just erroneously assume that this Wind Power Plant will stop oil tankers from their deliveries. How naïve is this assumption? Please do not allow yourself to fall for this deception as the Power Plant investors would want you to.

The Power Plant investors are trying to lead people to believe that a 420 foot tower will not really be seen. This appalls me!!!!!!!!!! You can see channel markers and buoys from shore that are approximately 10 feet high. They have been oh so crafty in quoting distances from shore – 4 miles from Yarmouth, 11 miles from Nantucket, etc. What about the distance from

Craigville, Hyannisport, Osterville or Cotuit? From any of these areas – no longer will you see beauty and tranquility. If you allow this disaster to occur – you will see a hideous power plant.

I am not a rich person with a huge home on the water, nor stand to make any money if the Power Plant goes up or not. I have a very small home. I am a Cape Codder who has grown up on Cape Cod. I went to school at a top college in the Boston area. I made the choice to come back to the Cape after college and make far less money than I could have made in Boston or any other city. I made this choice so that I can drive by the beach on a daily basis to see the serenity of the ocean. I made this choice so that I can go out in a boat in the Horseshoe Shoals area and fish or just enjoy the serenity. Many people have chosen to live here and to vacation here because of the serenity and beauty. This choice is not made to see a power plant. When you see a beautiful picture or painting of a beautiful beach scene on Cape Cod or Florida or St. Thomas or Bermuda or Bahamas, etc. – do you see a beach with a palm tree and wind mills??? No – you see a beach and water and maybe a sunset or a boat in the background. Humanity craves this serenity and we flock to the serenity - be it on Cape Cod or any of the other beautiful places. Please do not allow these Cape Wind Power Plant investors destroy this National Treasure!!! As Mitt Romney mentioned – why not put it in the midst of the Grand Canyon??? There is certainly more wind there.

The Cape Wind Draft Summary is erroneous in many many ways. Some of these that are so noticeable to me are as follows. The cuisinarts will certainly kill more than 365 birds per year. There are numerous studies showing that up to 400 per DAY have been killed by a non moving tower. Properly done studies would show mass killings of bird life caused by these towers. The study and Cape Wind Power Plant advertising have said that these towers "are miles offshore". Psychological studies have been done indicating that inflection in the voice can lead a subject to believe vastly different results. The uninformed actually believe that you will not see these monstrosities. However – if allowed to be erected – people will then see how close the "miles offshore" really is. You people making this decision need to know how close 2 miles away really is. From what distance can you still see the Statue of Liberty?

"Prior to issuing a Permit, the Corps must prepare either an Environmental Assessment and a "Finding of No Significant Impact". There is no possible way of determining this if you are able to look at all of the true facts. The skewed "facts" that the Cape Wind Power Plant investors are presenting are not facts. They are taking facts and twisting them so much that they do not even resemble the original "fact". Please redo the studies with independent people. Do not allow the Power Plant people to pay off the "powers that be" and allow this Power Plant to be pushed through the system by paying off the correct people. It is very disgusting that we are seeing this happen in our country.

This location for this experiment with all of the hazards to navigation in the air and waterways, and the sight of this hideous mess, along with the high possibility of a spill that will cause irreparable damage to the coastlines of Cape Cod, Marthas Vineyard, and Nantucket is not acceptable. Put a mess of an experiment like this one offshore where it will not cause so many problems for so many people and industries. I will cost the investors more money? Who cares? The public should not have to pay by the loss of this beautiful National Treasure so that a private company can make money. (Lots of money.) Perhaps the Power Plant investors should invest more money and create a tower that can withstand ocean effects such as waves and storms and build these monstrosities offshore. (Not 1 mile offshore. I mean 100 miles offshore where people will not see a National Treasure ruined. 500 miles away from anything that will be ruined when the towers fall apart and the oil spill will not ruin the Cape Cod shore.

The report indicates that the seabed will only be disturbed for 60 feet around each tower. Even if you use these silly numbers and multiply by 150 towers ----too big of an area to be acceptable. But, the truth is that the entire area around the seabed will be disturbed. This will disturb the life in the seabed which will in turn disturb the life that depends on this and will disturb the fish that feed on that, etc. etc., causing the chain reaction that will extend to the sea life that we as humans see such as the bait fish, the bluefish, stripers, seals and many birds. Will the sharks that are presently in the Horseshoe Shoals area now come into shore more? Once the ecosystem is permanently ruined – who knows what may happen? The protected species will no longer come back and it will be our fault that we allowed their ecosystem to be ruined.

It is appallingly narrow minded that the report tries to insinuate that the actual spot where the cable is laid or the monopile in the ground is the only area that will temporarily be disturbed in the ocean life. Where does the slurry go? What happens because of the pounding and smashing and general building noises due to this mega construction site? Of course this is going to damage the eco system. It is clear that this report has been written with a slant from the Power Plant marketing employees.

The report claims that the tower design and lighting will minimize impact by birds. This is a joke!! I can just hear the thoughts of the birds: " Oh look – a red light. I that means "stay away". I will fly a different way. But wait, I cannot fly anywhere because there are 150 of them. We cannot go anywhere. What do we do?? They have to be joking!!! The birds do not stay away due to lights! They go the way they have been migrating for millions of years. Do not say that these lights will minimize impact. What a ridiculous statement. Have a study done by someone who is realistic.

The report states that the shellfish beds are recreational, so insinuating that in essence it does not matter if they are destroyed. Again- how ridiculous. The duty of the Corps is to find that there is no significant impact. I do not see anywhere that "It can be ruined if no one makes money from it." Whether the shellfish beds are recreational or commercial – they should not be destroyed. These will be destroyed if the Power Plant is built. This is not acceptable!

The report states that the area of paleosols will be kept safe. What a joke. As in areas of land that should be kept safe – the contractors- take no care and after an area is destroyed they say "oops", and maybe they pay a fine. But – it is too late. The area is already destroyed. That is what will happen here is these Power Plant builders are allowed to go forward. If they are forbidden from entering the area in the first place – this will not happen.

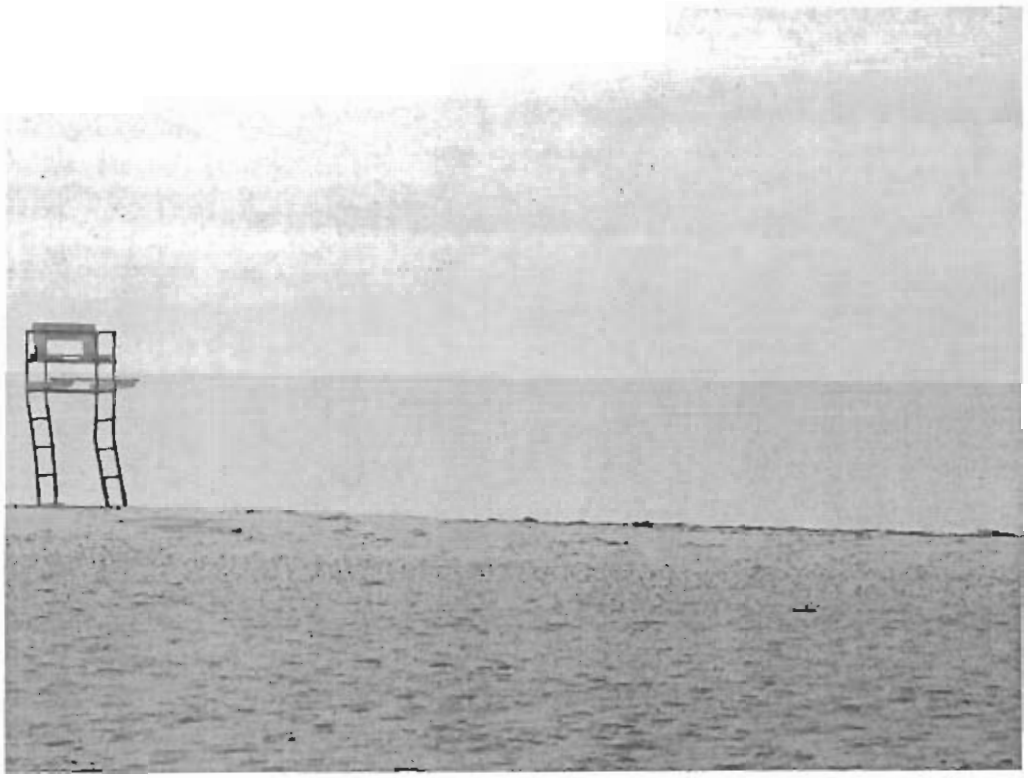
The more that you read of the marketing BS from these Power Plant marketing reps, the more repulsive it becomes. "The project would add a build element" is a very interesting way of saying that this virgin beautiful national treasure will now look like a man made disaster construction zone. They say that it will "change the daytime view". What an understatement!!!!!!!!!! It will have a hideous daytime and night time view. They go further to say that the fog horns will be "largely inaudible". Another gross misplay on words. (However, they later say that the horns will be inaudible on shore.) These horns certainly will be audible. I live 1.5 miles from the water and I can hear the fog horns when I am inside my house. You will definitely hear these horns from anywhere near the shore. Again – if these are allowed to be installed – after the fact – the will say – "hmmmm I guess you can hear them. Oh well." This is not acceptable.

There are so many huge problems with this Cape Wind Power Plant. I have just scratched the surface on the many problems with this disaster. I am hoping that the "powers that be", that you who are reading this, respond to the wishes and concerns of the public and common sense and do not allow this private concern to build a Power Plant in this beautiful public national treasure.

The destruction that this will cause to the environment, to the wildlife, to the fishing community, to the safety of boating and aircraft and to the beauty of the area is absolutely incalculable. Please do not allow this to happen.

Sincerely;

Deborah E. James



Adams, Karen K NAE

From: Robert W. Scott [468central@adelphia.net]
Sent: Thursday, February 24, 2005 1:06 PM
To: Energy, Wind NAE
Subject: Energy from wind

004887

One needs only to know that just in the past hundred days, throughout our planet, the weather has been the cause of many disasters.....we MUST go to a form of producing energy that excludes the global warming use of oil. Tornadoes, hurricanes, rain, snow....all have are believed to be related to the warming. Computer models show most of our coastal cities inundated by rising ocean levels.
Our government, which is us, must take action NOW.
The wind farm in Nantucket Sound is a vital first step.
Robert W. Scott
East Falmouth, MA

BAACH ROBINSON & LEWIS PLLC

C04888

February 24, 2005

VIA ELECTRONIC MAIL

Karen Kirk Adams
Cape Wind Energy Project EIS Manager
Corps of Engineers, New England District
696 Virginia Road
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Wind.energy@usace.army.mil

RE: Cape Wind Energy Project Draft EIS, File No. NAE-2004-338-1

Dear Ms. Adams:

Attached are Comments regarding the Cape Wind Energy Project Draft Environmental Impact Statement. As more fully set forth in the Comments, I have been retained by the Alliance to Protect Nantucket Sound to review the Draft EIS based on my experience and independent judgment. These comments supplement those of the Alliance. Thank you for your consideration.

Sincerely,

Lois J. Schiffer

Attachment

BAACH ROBINSON & LEWIS PLLC

Comments on Draft Environmental Impact Statement for Cape Wind Energy Project

File No. NAE-2004-338-1

Lois J. Schiffer
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BAACH ROBINSON & LEWIS PLLC

WASHINGTON | LONDON

Comments on Draft Environmental Impact Statement
for Cape Wind Energy Project
File No. NAE-2004-338-1

Lois J. Schiffer, Baach Robinson & Lewis, PLLC
Baach Robinson & Lewis, PLLC
1201 F Street, NW – Suite 500
Washington, DC 20004

I have been retained by the Alliance to Protect Nantucket Sound, Inc. ("Alliance") to review and comment on the Draft Environmental Impact Statement for the Cape Wind Energy Project, Nantucket Sound, Massachusetts, dated November 8, 2004 ("DEIS") from an objective, independent and policy-based perspective by applying my experience with NEPA. My perspective is that of an outside reviewer examining the draft broadly; I do not conduct this review or make these comments as an advocate. These comments supplement those of the Alliance.

Based on my review of the DEIS, and my extensive experience with the National Environmental Policy Act, the DEIS has significant gaps of information important for the decision maker and the public. These comments emphasize three points: the Corps' DEIS is not designed effectively to meet the important purposes of NEPA of assuring adequate information for the decision maker and effective public participation; the Corps of Engineers does not adequately define the purpose and need for the Cape Wind Project in terms that emphasize the Corps' public interest role because it does not adequately examine use of the resources and alternatives thereto; and the alternatives analysis does not effectively evaluate, especially in light of the first-time precedential nature of the project—through any of the available means such as tiering, a programming EIS, or a sound cumulative impacts review—the significant effects of the number of offshore wind projects that the Project here initiates.

I. Introduction.

My review of this DEIS brings to bear over 30 years of working on cases under the National Environmental Policy Act, 42 U.S.C. §§4331 et seq. ("NEPA").[1] This work includes the period 1978 through 1981, when, as Chief of the General Litigation Section in the Land (now Environment) and Natural Resources Division at the United States Department of Justice, I had supervisory responsibility over virtually all NEPA litigation throughout the United States; and 1993-January 2001, when, as Assistant Attorney General in charge of that Division, I had higher-level supervisory responsibility for virtually all federal NEPA lawsuits in the United States. In addition, I have taught environmental law, including the National Environmental Policy Act, as an adjunct professor at Georgetown University Law Center since 1986, and covered NEPA as part of an environmental policy course I taught at Harvard Law School in Spring 2004. I have given speeches about NEPA, and have also written several articles on NEPA. My familiarity with the purposes and application of NEPA is extensive.

II. NEPA's purposes inform decisions about the scope of the DEIS.

In analyzing a project under NEPA, it is helpful to start with the purposes of an environmental review. NEPA's important purposes include informing the federal agency decision maker, and including the public in evaluation of information and government decision making. Robertson v. Methow Valley Citizens' Council, 490 U.S. 332(1989). That decision holds:

> "The statutory requirement that a federal agency contemplating a major action prepare such an environmental impact statement serves NEPA's "action-forcing" purpose in two important respects. See Baltimore Gas & Electric Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 97 [rest of citation omitted](1983); Weinberger v. Catholic Action of Hawaii/Peace Education Project, 454 U.S. 139, 143 [rest of citation omitted](1981). It ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger

[1] My first involvement with a NEPA case was in Gage v. Commonwealth Edison Co., 356 F. Supp. 80 (N.D. Ill. 1972).

> audience that may also play a role in both the decision making process and the implementation of that decision."[2] 490 U.S. at 349.

Further, an important tool that the EIS provides for meeting these purposes of informing the decision maker and public participation is the development of alternatives to the proposed project and proposed use of the resource. See generally NEPA, 42 U.S.C. §4332(2)(C)(iii) and (E); CEQ Regulations, 40 C.F.R. §1502.14. Examining alternatives is like comparative shopping—it provides for more informed and wise decisions.

As described more fully below, the Corps of Engineers decides whether to grant permits under Section 10 of the Rivers and Harbors Act by applying a broad "public interest" standard. While there are extensive documents and information in the Cape Wind DEIS, NEPA's continued emphasis on careful analysis to inform the decision maker as it makes the public interest determination needed here requires more than has been done to date. Importantly, for the agency to make informed decisions about use of the resources for which Cape Wind seeks project approval through permitting, it must sensibly consider not only alternative ways that the agency could accomplish Cape Wind's purposes, but also alternative uses that the agency could make of the resources, such as submerged lands, offshore waters, and

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[2] The decision continues, 490 U.S. at 349:

> "Simply by focusing the agency's attention on the environmental consequences of a proposed project, NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast. See ibid.; Kleppe, supra, at 409. Moreover, the strong precatory language of 101 of the Act and the requirement that agencies prepare detailed impact statements inevitably bring pressure to bear on agencies "to respond to the needs of environmental quality." 115 Cong. Rec. 40425 (1969) (remarks of Sen. Muskie).
>
> "Publication of an EIS, both in draft and final form, also serves a larger informational role. It gives the public the assurance that the agency "has indeed considered environmental concerns in its decisionmaking process," Baltimore Gas & Electric Co., supra, at 97, and, perhaps more significantly, provides a springboard for public comment, see L. Caldwell, Science and the National Environmental Policy Act 72 (1982)."

the Nantucket sound viewshed, that Cape Wind would use through the permit it seeks.

In the Cape Wind DEIS, much of the analysis is focused on Cape Wind's purpose for the project, as modified by the Corps, and not on the important government and thus public goal of how most effectively to use the resources at hand for these or other purposes. Since the offshore area under consideration is in many ways irreplaceable, and is certainly limited and precious, the Corps' analytic approach is problematic and should be modified here. In short, the Corps is looking at how to generate electricity, and a public interest analysis would focus on the resources and include a review of options for using the offshore and viewshed resources for these or other purposes. If NEPA's important purposes of informing the decision maker and involving the public are to be met, additional DEIS material is required.

III. An effective DEIS would define the purpose and need more broadly and include evaluation of alternatives for use of the submerged lands and off-shore waters and the viewshed.

Because the Corps applies a broad public-interest standard to its analysis and decision making, a more comprehensive EIS is required. The Corps of Engineers applies a broad public interest standard to its decision whether to grant, deny, or condition a permit under Section 10 of the Rivers and Harbors Act. 33 C.F.R. Secs. 320.1(a)(1); 320.4(a); Corps Q&A #45.[3] That public interest standard must define the purpose and need of the project, and in turn, the alternatives the Corps considers. An important case in this regard is Simmons v. Corps of Engineers, 120 F. 3d 664 (7th Cir. 1997), a case in which the Court of Appeals analyzes the importance of an agency framing its "purpose" sufficiently to include adequate alternatives, and finding that, in that case, the Corps had too narrowly defined its purpose when it assumed it could serve two water uses by looking only at a single source, not multiple sources for the water. The Court held that "[a]n agency cannot restrict its analysis to those 'alternative means by which a particular applicant can reach his goals.'...[citations omitted]...This is precisely what the Corps did in this case. The Corps has 'the duty under NEPA to exercise a degree of skepticism in dealing with self-serving statements form a prie beneficiary of the project.' ...[citations and footnote omitted]...And that is exactly what the Corps has not shown in its wholesale acceptance of [the applicant's] definition of

[3] U.S. Army Corps of Engineers, New England District, Cape Wind Energy Project Frequently Asked Questions (FAQs), http://www.nae.usace.army.mil/projects/ma/ccwf/faq.pdf, Question and Answer #45.

purpose." 120 F. 3d at 669. Cf. Colorado Environmental Coalition v. Dombeck, 185 F. 3d 1162 (10th Cir. 1999)(purpose and need defined in terms of already-adopted Forest Plan, so alternatives could be limited to those that substantially met that Plan); Van Abbema v. Fornell, 807 F. 2d 633, 638 (7th Cir. 1986).[4] The Corps' rules interpreting applicable statutes thus provide it with broad discretion to grant, deny, or condition a permit to serve the public interest. To inform its decision making under this broad standard, and to involve the public effectively in that decision making, an EIS of adequate breadth is required. The DEIS in several significant ways fails to provide adequate information to the decision maker or to effectively inform the public when the decision is made under this broad public interest standard.

The too-narrow approach of the DEIS flows, in the first instance, from the Corps' definition of the "purpose and need" for the project. The DEIS describes the purpose and need of the Cape Wind Project at DEIS 2.0. It is "to provide a utility-scale renewable energy facility providing power to the New England grid." EIS at 2.2 (p. 2-2). The Corps notes: "The USACE considers and expresses the proposed activity's underlying purpose and need from a public interest perspective when appropriate, but generally focuses on the applicant's purpose and need statement. The USACE exercises independent judgment in defining the purpose and need for the project from both the applicant's and the public's perspectives." Ibid. [5]

The Corps' NEPA regulations in fact require less deference to the permit applicant. They provide: "Also, while generally focusing on the applicant's [purpose and need] statement, the Corps, will in all cases, exercise independent judgment in defining the purpose and need for the project from both the applicant's and the public's perspective." 33 C.F.R. Part 325, App. B, Sec. 9(b). The Corps has not followed its Rule here. Certainly identifying

[4] In the instant case, there is no limiting prior plan like that in Colorado Environmental Coalition. Many cases addressing "purpose and need" analysis under NEPA arise in the context of airport construction. There, the FAA is by statute given much more narrow discretion than the broad public interest authority of the Corps here. See, e.g. Citizens Against Burlington v. Busey, 938 F. 2d 190 (D.C.Cir. 1991), cert. denied, 502 U.S. 994 (1991). Thus, those cases are not helpful in analyzing how the Corps should approach the Cape Wind Project EIS.

[5] Here, the statement of purpose and need from the applicant differs slightly from that of the Corps in that the applicant specifies a ceiling on proposed power generation (454 MW), and specifies that the renewable energy will be wind-generated. DEIS at 2.2, p. 2-1. The Corps' modifications cause it to look at different ways to generate electricity, but do not cause it to look at other uses of the submerged lands, offshore waters, and viewshed resources other than through the no-action alternative.

approaches to energy production and conservation that minimize or mitigate adverse environmental effects is important, and renewable energy may be an important step toward that goal. But the Corps' approach to establishing a purpose and need that focuses primarily on the applicant's approach of generating electricity does not effectively serve the broad public interest perspective that the Corps' regulations require. See, e.g. 33 C.F.R. §320.4(a). By allowing the permit applicant effectively to define the purpose and need, the Corps may limit its evaluation of the public interest. That problem is apparent here where the "purpose and need" focus is on the goal the permit applicant seeks, rather than on the goal of approaching the use of the resources that best serves the public interest. [6]

The problem that the Corps' approach causes is well illustrated by analogy. Suppose the Corps were charged with running a restaurant, assuring that provides meals that are nutritious, varied, and well-prepared. To meet that public purpose, the Corps must assure that it has adequate cooking equipment, a good food supply, and an approach to menu planning that includes variety daily and over time. Yesterday, the stove broke, and the usual supplier of vegetables left town. Today, two "project proponents" come to see the Corps—one sells refrigerators, and the other sells meat. Each defines its purpose and need in terms of the product it sells, and an evaluation of alternatives in light of that purpose and need would entail a look at different types of refrigerators and different types or sources of meat. Neither would meet the real needs of the Corps' kitchen: that would require evaluation more broadly of cooking equipment and food supply to assure the public interest goal of meals that are nutritious, varied, and well-cooked. A purpose and need description that started with the "project proponents'" goals would not be broad enough to serve the public interest. A better view of the Corps' obligations under its public interest standard in light of the purposes of NEPA review, as outlined by the Supreme Court in Methow Valley, supra, and other cases, would require the Corps to look at its whole kitchen plan, not just the desires of the refrigerator and meat sellers.

Here, by defining the purpose of the project in light of the permit applicant's request, the Corps is failing to run its kitchen well, or to do sound comparative shopping among the available options—it has failed effectively

[6] It is helpful to note that the CEQ regulations require that an EIS specify purpose and need, but do so more broadly. At 40 C.F.R. §1502.13, the regulations provide: "The statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."

to consider the broad public purpose of sound management of submerged lands and waters offshore of the United States, and the viewshed, and the outcome of permitting private use of such resources. It is failing to meet its public interest standard and obligation. Instead, the DEIS should be amended to include a thorough evaluation of alternative uses for the resource of submerged lands and waters offshore of the United States, both more generally and in this geographic area, and alternative uses of the viewshed, cultural, and historic resources of the area. [7] That approach would effectively implement the purposes of NEPA set forth in the statute and affirmed in Methow Valley, supra, and would adequately inform the broad public interest approach that the Corps applies to decisions.

IV. An effective EIS would include evaluation of offshore wind energy across the country either through a programmatic analysis or as a component of determining cumulative impacts of this project.

The DEIS also fails adequately to analyze more generally the use of submerged lands and offshore waters for wind energy across the United States, although this project could open the door to such use. Two components of NEPA law and analysis underscore the need for such a broad analysis as part of this DEIS (or as a separate EIS to which the Cape Wind Project EIS is tiered).

First, NEPA particularly addresses the importance of effective analysis for precedent-setting projects. Thus, the CEQ regulations implementing NEPA provide that, in evaluating whether an action "significantly" affects the environment, a factor is "[t]he degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration." 40 C.F.R. §1508.27(b)(6). See also Anderson v. Evans, 314 F. 3d 1006, 1021-1023(9th Cir. 2002), opinion amended without affect on this holding at 350 F. 3d 815 (9th Cir. 2003), and 371 F. 3d 475 (9th Cir. 2004)(requiring an EIS when whale hunting quota may affect other such quotas in the future). Here, the DEIS clearly states that permitting the Cape Wind Project would be the first action of its kind in the United States. DEIS at 2.3 (p. 2-2). If the Corps grants a permit here, its action opens the door to permits for offshore wind energy projects across the United States. Indeed, in light of the significance of the project, the Corps has undertaken an EIS process. But the appropriate handling of a precedent-setting project in an EIS goes beyond a decision to undertake an EIS; it

[7] Indeed alternative uses for all the resources affected by the proposed project should be evaluated.

necessarily entails an environmental analysis of what may result from setting the precedent. Here, the consequence will be establishing the principle that throughout our nation's offshore areas the Corps will permit large wind projects even in the face of serious adverse effects on viewshed, cultural and historical resources, and other consequences. To meet the purposes of CEQ's regulations recognizing the importance of a precedent-setting agency action, a full evaluation of those broad consequences should be assessed. The DEIS does not do so. So, for example, both the Corps and the public would be importantly informed by knowing the possible number of offshore wind projects the Corps projects over both the short-run and the long-run; their environmental consequences across the country and locally; and alternative approaches to such projects. Without such analysis, the DEIS effectively acknowledges that a precedent is set but does not show where the precedent leads.

The importance of this approach in the context of the Cape Wind Project EIS is underscores by the recent Report of the U.S. Commission on Ocean Policy Report An Ocean Blueprint for the 21st Century (September 20, 2004).[8] The Report calls for a comprehensive review of wind energy offshore of the United States. The President has established a Committee within the Executive Branch to address and implement the Report. Certainly, a comprehensive review after the barn door is open would not serve effectively the public interests that the Corps under its regulations takes into account.

Second, CEQ regulations require that cumulative actions be addressed in the same EIS as an action that starts or leads to the cumulative impacts; the regulations also require that cumulative impacts be evaluated in an EIS. 40 C.F.R. §§1508.25(a)(2) and (c)(3). CEQ defines "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taken place over a period of time." 40 C.F.R. §1508.7. Because additional offshore wind power projects are reasonably foreseeable if the Corps permits the instant project to go forward, a comprehensive look at such projects across the offshore of the United States is a cumulative impact of this project and must be evaluated thoroughly in the EIS. That has not been done here.

[8] http://www.oceancommission.gov/documents/full_color_rpt/welcome.html

Thus, both because it is precedent-setting and because cumulative impacts must be analyzed, the Corps is required to include in the EIS for the Cape Wind Project a full analysis of offshore wind energy for the United States as part of the EIS here. Only with such an analysis can the Corps decisionmaker have sufficient information to undertake sound public interest review, and only with such an analysis can the public participate effectively in the permitting decision at issue. Only with such an analysis, including an effective look at alternatives and cumulative impacts, will the review of offshore wind energy projects not be constrained by the applicant's preferences for a particular project.

One possible approach for the Corps to take in developing comprehensive information about offshore wind facility use and permitting in the United States is for the Corps to undertake a programmatic evaluation of offshore wind power. See CEQ regulations on program EISs at 40 C.F.R. §1502.4(b); and on tiering at 40 C.F.R. §1502.20 and §1508.25. The importance of a programmatic analysis has been brought to the Corps' attention earlier in this process. If such a broad programmatic analysis is undertaken separately, the Cape Wind EIS can be tiered to that review. Certainly, a programmatic EIS would meet the imprecations of the CEQ regulations, which recognize the importance of a comprehensive review for generically linked or technologically linked actions. These regulations provide, at 40 C.F.R. §1502.4(c)(2) and (3): "When preparing statements on broad actions (including proposals by more than one agency), agencies may find it useful to evaluate the proposal(s) in one of the following ways: ...(2) Generally, including actions which have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter. (3) By stage of technological development...." [9]

An alternative approach is to wait to see whether, in response to the Ocean Commission Report, supra, the United States undertakes the recommended comprehensive review of offshore wind facilities, and incorporate any such document into the EIS.

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[9] Section 40 C.F.R. §1502(b)(3) provides in toto: "(3) By stage of technological development including federal or federally assisted research, development or demonstration programs for new technologies which, if applied, could significantly affect the quality of the human environment. Statements shall be prepared on such programs and shall be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives."

There is a third approach. Even if the Corps does not prepare a programmatic analysis, as discussed above, it must develop programmatic information as part of the cumulative impacts analysis of the instant EIS. Cf. Kleppe v. Sierra Club, 427 U.S. 390 (1976) (programmatic EIS not required for regional coal leasing program, but other environmental reviews undertaken). Until that information is developed and incorporated into the EIS for the Cape Wind Project, the EIS will not meet the requirements of NEPA; the Corps as decision maker under the public interest standard will not be adequately informed; and public participation will be hampered. In addition, the Corps will not, without such information, be able to decide effectively what use to make of the resources at issue here in a manner that promotes the public interest.

CONCLUSION

For the reasons discussed in this Comment, the Corps should substantially augment information in the DEIS before making a final decision about whether to grant a permit for the Cape Wind Project.

Thank you for your consideration of these comments.

BAACH
ROBINSON
&LEWIS
PLLC

Adams, Karen K NAE

From: Wavachon@aol.com
Sent: Thursday, February 24, 2005 1:10 PM
To: Energy, Wind NAE
Cc: Wavachon@aol.com; rswisher@awea.org
Subject: Cape Wind Energy Project Comments

004889

To Whom It May Concern:

Below are supportive comments related to the current approval process that is ongoing by The Corps in relation to the Cape Wind Energy Project on Horseshoe Shoals off of Cape Cod, Massachusetts. By way of background, I have been a private wind energy consultant, working out of the Commonwealth of Massachusetts for nearly 27 years and am very familiar with the majority of the technologies involved in the wind energy business. I have, in no way, worked for or on behalf of the Cape Wind Energy Project at any time.

If the Cape Wind Energy Project (CWEP) was constructed, it would benefit the region and the nation in the following ways:

(1) It would assist the local air quality by eliminating a portion of the pollution currently generated by Massachusetts electric utilities to generate the power that would avoided by the CWEP. It has been estimated by the project's sponsors and the American Wind Energy Association that the CWEP generate roughly one-half of the energy needs of Cape Cod, Massachusetts.

(2) It would cause downward pressure on local and regional natural gas prices because when the demand for natural gas is the greatest in the winter, the wind production from the CWEP would generally be the greatest. This would have a huge economic benefit for the region and would be most beneficial to residents on the lower end of the economic ladder. Recognize that many of the opponents of the project are on the upper end of the economic ladder.

(3) The technology of wind energy has been proven to work and work at high reliability. There is no question about that. Through my own experiences representing investors, banks and insurers for more than 20 years, I am very aware of the growth in wind energy systems' reliability and associated costs to keep them operating reliably and efficiently. The costs for such reliable operation are known and very reasonable. The lifetime projections for such project equipment is at least 20 years.

(4) The regional economic development benefit is even greater than the benefit due to downward pressure on energy prices. There would be an increase of at least 40 to 60 permanent jobs in the shore-side region that would be supporting the long-term operation of the project and probably hundreds of temporary local jobs during the multi-year construction period.

(5) The region (especially MA) has a mandate to provide a level of renewable energy over the next decade. The CWEP will help immensely toward that end. Similarly, whether the current leadership in Washington recognizes and plans for a carbon-constrained economy or not, enlightened businesses in the whole nation are aiming in that direction and planning to be a part of the solution - to take advantage of the new opportunities. The CWEP would be an integral part of that response and enlightened planning.

(6) Through my work in this field, I realize that the sponsors of the project are taking substantial economic risk in this project, with the benefits to accrue to them and society at large should the project be approved and work. They will primarily use private funds and, thus, the economic risk to the public is very low or zero.

(7) When profiling the risks of a project at the outset, the permitting risk is very often the greatest risk. We realize that the CWEP is a novel idea to many people, but it is not novel to Europeans - who have experienced large, off-shore projects since approximately 1992 (off of Denmark). A major future thrust for wind projects in Europe is, and will continue to be, in the

offshore market. The US will eventually follow in that direction. The environmental concerns associated with European projects are not an impediment. The time is ripe to start a significant US offshore project to show a level of involvement and leadership.

(8) Through efforts and recommendations by The Corps and other appropriate agencies and departments of the State and Federal Government, all efforts should be made to legally streamline the approval process at the State and Federal level - so that future projects such as the CWEP can receive "reasonable treatment" in the permitting process. Due to our very strong need for clean air and renewable energy, I suggest an approach similar to that of the Telecommunications Act of 1996 that streamlined the approval process for cell phone tower sites.

Thank you for your attention and efforts on this project.

Sincerely,

William A. Vachon
President
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FAX: (978) 526-8180

Adams, Karen K NAE

From: Howard Bernstein [hbernste@ix.netcom.com]
Sent: Thursday, February 24, 2005 1:27 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004890

Dear Ms. Karen Kirk-Adams:

I am not certain that my prior on-line message actually got sent. I cannot spend the time to recreate what was a well-organized marshalling of facts and arguments. I will just state my conclusion: I strongly support the Cape Wind project on the grounds of siting, the threat of global climate change, environmental and economic sustainability, environmental justice, and a future for my grandchildren on this fragile planet. Thank-you.

Sincerely,

Howard Bernstein
60 Pinedale Ave
Billerica, MA 01821

cc:
Capewind

Adams, Karen K NAE

From: Royden Richardson [royden@capecod.net]
Sent: Thursday, February 24, 2005 1:29 PM
To: Energy, Wind NAE
Subject: Wind Farm In Nantucket Soumd

004891

Dear Karen Kirk-Adams:

I am writing to let you know that I am opposed to the development of a wind farm on Horseshoe Shoals in Nantucket Sound for what I consider very obvious reasons and I know that these reasons have all been shared more eloquently by others. Nantucket Sound is our wilderness and it needs to be protected and preserved not become a victim of industrialized development. I have concurred with the comments of those folks opposed who love to boat, fish and those who want to protect our birds. When I served as President of the Barnstable Town Council we were among the first to hold public hearings and vote to oppose this project. Please deny the request for a permit.

Respectfully,

Royden C. Richardson
Barnstable Town Councilor

Adams, Karen K NAE

From: Benneville Strohecker [benneville@benneville.com]
Sent: Thursday, February 24, 2005 1:41 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us; marc@mbreslow.org
Subject: Cape Wind Effort

004892

Karen Kirk Adams

Dear Ms. Adams,

The Cape Wind Project makes so much sense it would be wrong not to support it.

Sincerely,
ben

.....
Benneville Strohecker
Original Fantasies for Children
(781) 631-7691
http://www.benneville.com

Adams, Karen K NAE

From: Jon Kataisto [jonkataisto@myeastern.com]
Sent: Thursday, February 24, 2005 1:39 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004893

Dear Ms. Karen Kirk-Adams:

I support the Cape Wind proposed wind project without reservation. I was born and raised in Massachusetts and visit Cape Cod at least once every summer or fall season. While my professional work involves steam turbines as a mechanical engineer, I strongly think windpower is needed to provide both energy where it is economically feasible and to lessen the impact of fossil fuel use, as part of a much needed future energy policy of our country.

I have witnessed large wind turbines in Pennsylvania, Denmark and Finland and find their presence to be appealing to the eye, fascinating to the mind and surely friendlier to the total environment than other alternatives. As a taxpayer and citizen, I feel private projects like this need to be allowed on public property, if necessary, with some type of lease/license arrangement so the cost benefit can be fairly returned to the country.

Please let common sense prevail in the decision to allow this project to go forward and lead to similar projects to harness the power that this technology can extract so wonderfully from the air. I hope you will support the proposed Cape Wind Project and future projects that may be proposed off of Long Island and in Chesapeake Bay.

Sincerely,

Jon Kataisto

Sincerely,

Jon Kataisto
907 Vauxhall St. Ext.
Quaker Hill, CT 06375

cc:
Capewind

Adams, Karen K NAE

From: Mark Meenan [mwmeenan@yahoo.com]
Sent: Thursday, February 24, 2005 1:51 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

C04894

Dear Ms. Karen Kirk-Adams:

Wind power rules! I think we need to find renewable resourced to use and learn to depend less on foreign oil. Any who argue that this is an eyesore are fool. The proposed wind turbines are beautiful too look at, and even more beautiful when you realize they are helping to keep earth clean.

Sincerely,

Mark Meenan
96 Bay State Road
Boston, MA 02155

cc:
Capewind

J.F. WHITE CONTRACTING COMPANY

10 BURR STREET · FRAMINGHAM, MASSACHUSETTS 01701-4617
TELEPHONE (508) 879-4700 · FAX (617) 558-0460

24 February 2005

004895

Ms. Karen Kirk-Adams
Cape Wind Energy EIS Project
New England District
U. S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Kirk-Adams:

I attended one of the Public Hearings regarding the Cape Wind project and was particularly impressed by the personal testimony of individuals residing near existing fossil fuel power plants. The accounts of family health and respiratory problems confirm to me that we must develop alternative energy resources in New England.

In my reading of the Draft Environmental Impact Statement I have found no mention of environmental effects which would significantly detract from the immense benefits of the clean and renewable power offered by the Cape Wind project. This project should be allowed to proceed toward construction.

I also object to the suggestion that further reviews of Cape Wind should be undertaken. Health considerations for individuals living near fossil plants should be addressed as soon as possible by the implementation of energy alternatives such as Cape Wind.

Respectfully,

J. F. WHITE CONTRACTING COMPANY

James F. Clark
Vice President, Diving Division

K:/files/diving/correspondence/CapeWind

J.F. WHITE CONTRACTING COMPANY

10 BURR STREET · FRAMINGHAM, MASSACHUSETTS 01701-4617
TELEPHONE (508) 879-4700 · FAX (617) 558-0460

24 February 2005

004896

Ms. Karen Kirk-Adams
Cape Wind Energy EIS Project
New England District
U. S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Kirk-Adams:

I have reviewed the "DEIS" assessing the Cape Wind Energy Project and commend the Corps of Engineers for your comprehensive efforts regarding this project.

Additional energy resources will soon be required in New England, and the Cape Wind Project clearly offers to supply a portion of that need with minimal direct impact to the environment. Secondary environmental effects, such as fuel delivery as required by conventional power plants, will also be virtually negligible.

Wind energy is becoming increasing significant in Europe, and "J. F. White" is particularly interested in the potential for offshore wind energy development in New England. The "DEIS" required several years of preparation, and I believe that the Cape Wind project should finally be allowed to proceed to construction based upon its environmental merits.

It is clearly the role of our government to responsibly regulate maritime operations, but that role can be best achieved by increasing efficiency within the existing agency structure rather than by adding additional cost and bureaucracy. It would be unjust and irresponsible if the Cape Wind project were to be delayed for further reviews and/or the development of new federal standards by additional agencies.

Respectfully,

J. F. WHITE CONTRACTING COMPANY

Peter T. White
President

K:/files/diving/correspondence/Cape Wind

Adams, Karen K NAE

From: Kenneth A. Marshall [ken@donovans.org]
Sent: Thursday, February 24, 2005 4:29 PM
To: Energy, Wind NAE
Subject: Nantucket Sound Testimonial

To Whom it May Concern,

When deciding the fate of Nantucket Sound Wind Farm please consider that eventually it will be inevitable that the World will need to utilize the free energy that exists and all the money in the World will not be able to reverse the harm that we have imposed upon each other. Future humanity depends on common sense being displayed now. Please take the time to identify hidden agendas behind the people that oppose clean energy. The trail will lead you to investors in utlity companies that stand to profit off of the backs of each and every one of us. Thank you for considering my testimony.

Sincerely,
Kenneth A. Marshall
Town Councilor
Bristol Rhode Island

Patricia Diehl
13073 23RD Avenue North
Palm Beach Gardens, FL 33410

February 24, 2005

004898

Karen Adams, Project Manager
Regulatory Division
696 Virginia Road
Concord, MA 01742

RE: CAPE WIND ASSOCIATES
EIS COMMENTS

Dear Ms. Karen Adams:

I have the following comments on the draft EIS for CAPE WIND.

1. Not Economically Feasible nor Practical From a Transmission Perspective

Appendix 3-D of the Cape Wind EIS i ncludes a discussion of NEPOOL'S Current Regional Transmission Expansion Plan. This section uses data from 2002/2003. This is not up to date and the 2004 NEPOOL Expansion Plan should be used. An updated analysis base upon the 2004 plan and a transmission interconnection study should be prepared before approval of a permit by the ACOE to determine the dispatch availability for Cape Wind and the viability of this project. Without transmission capacity and economic prices for the output this project is not viable.

Chapter 11.0 of the RTEP04 discusses the wind projects very briefly and not too enthusiastically. "ISO New England has close to 900 MW of proposed wind projects in its transmission interconnection study queue, none of which has started construction. If and when they are built, these projects might provide half of this required energy." Certainly, this statement does not illustrate a resounding confidence in building this facility.

FERC has ordered the implementation of a Locational Installed Capacity (ICAP) market, effective on Jan. 1, 2006. Locational ICAP market will utilize a down-ward sloping demand curve to price capacity in each ICAP region. As a result, this will provide incentives to encourage investment in load pockets and congested zones. Is Cape Wind supplying a load pocket or congested zone? If not, coupled with the unpredictability of

the wind this project may be insignificant in terms of its value in supplying the electricity to the grid and not a project that should move forward.

2. Cape Wind Does Not Have Legal Rights to Submerged Land

Although the ACOE may be able to issue a dredge/fill permit, Cape Wind must show legal rights to utilizing submerged lands just as an oil rig is required to do by leasing and paying royalties. This area should first be evaluated for wind development in terms of environmental, economic and transmission requirements. If these are acceptable a competitive leasing should take place to assure that the citizens of the U.S. get the most value for this property. If this permit is issued, it should be conditioned upon legal property rights prior to construction.

Thank-you for your attention to this matter.

Sincerely,

Patricia J. Diehl

AMERICAN LUNG ASSOCIATION®
of Maine

February 18, 2005

Karen K. Adams
Cape Wind Energy Project EIS Manager
U.S. Army Corps of Engineers
Regulatory Division
696 Virginia Road
Concord, Massachusetts 01742

C04899

Reference file # NAE-2004-338-1

Dear Ms. Adams,

On behalf of the American Lung Association of Maine, I am writing in support of the Cape Wind Energy Project. Our fundamental concern underlying our support rests with the implicit assumptions of the National Environmental Policy Act itself. Developed in the late 1960s, it understates the increasingly evident reality that our current pattern of energy consumption is having adverse regional and global consequences. When these consequences are added to the impacts from resource depletion and sprawl, they create a very disturbing context for considering the relationship between human activities and further environmental and ecological disruption. We are offering an alternative framework for considering this issue (attached). This framework was developed by the Presidential/Congressional Commission on Risk Assessment (of which I was a member) in 1997. While we realize that the issues to be considered under this framework go beyond the specific criteria of NEPA, we also realize that it is important to consider projects such as this one in light of the increasing fragile environmental underpinnings that make human existence possible.

In that regard, we request that the Cape Wind project be viewed within the context of a public health intervention. As a region, New England has the highest adult asthma rates in the country (approximately 1 in 10 people), and asthma rates in eastern Canada are as high (if not higher). Polluted air masses traveling through the northeastern United States can increase hospital admissions for lung and heart diseases as far north as Moncton, New Brunswick. This pollution is largely a consequence of an energy and transportation system heavily reliant on fossil fuel combustion. The State of Maine has recognized that its sources are contributors to the problem. Yet, it is also sadly true that the major portion of the air pollution burden we face comes from the south and the west of us. In addition, along with other New England states, Maine is also in the process of trying to implement a climate change action plan to reduce our greenhouse gas emissions. This action plan will also reduce emission of more proximate air pollution hazards such as fine particulates and ozone precursors. Clearly, though, despite our best efforts, Maine citizens will still experience respiratory health threats from our upwind neighbors unless they enact aggressive pollution reduction measures as well.

In conclusion, we would like the Army Corps of Engineers to consider seriously as an alternative to the proposed actions the consequences of **not** approving this project.

Sincerely,

Norman Anderson, MSPH
Environmental Health Scientist

Improving Life, One Breath at a Time

American Lung Association of Maine • 122 State Street, Augusta, ME 04330-5689
phone: (207) 622-6394 • 1-800-499-5864 • **fax:** (207) 626-2919 • **web:** www.mainelung.org

Adams, Karen K NAE

From: Joe Hackler [jhackler@whrc.org]
Sent: Thursday, February 24, 2005 2:48 PM
To: Energy, Wind NAE
Subject: Support of DEIS review and wind turbine developent

004872

Karen Kirk-Adams
Army Corps of Engineers
wind.energy@usace.army.mil

Dear Ms. Kirk-Adams,

I join my voice to the many other intelligent citizens who support the development of a large scale wind power project in Nantucket Sound by Cape Wind Associates.

Massachusetts as a State, and our entire nation, are currently utterly dependent on fossil energy sources for every aspect of our livelihood.

As a country - are now militarily engaged across the globe, both overtly and covertly to ensure continued access to a disproportionate share of the worlds oil and natural resources, while at the same time causing a similar unbalanced share of the pollution and climate changing burdons associated with this exploitation. This military engagement represents a huge cost not considered or counted in the DEIS. Nor are the millennial costs associate with nuclear waste containment. Nor are the untold sorrows that will be caused by an atmosphere heating without end.

The devastation will be complete.

It will also prove to be phenomenally short-sighted economically, as geological resource extraction limitations collide with an ever-expanding global energy appetite, and our own fossil energy-dependent economy grinds to a halt.

Given these trends it seems rather obvious that the public interest is far better served by expediting this project – and many more like it – than by caving into the narrowest interpretation of "environmental protection" in the form of protecting perceived threats to view-sheds and property values as espoused by the waterfront elite.

Sincerely,

Joe Hackler
237 Hatchville Road
East Falmouth, MA 02536

Adams, Karen K NAE

From: EDCroff@aol.com
Sent: Thursday, February 24, 2005 2:48 PM
To: Energy, Wind NAE
Cc: anne.canaday@state.ma.us; comments@saveoursound.org
Subject: Cape Wind DEIS

004873

Energy sources and reserves are matters for the federal government, just as the federal authorities are involved when, f. ex., it comes to national parks. A policy must be worked out for the development of all energy sources, taking into account its impact on the environment. Until a national policy has been established for where wind energy may be harnessed, on land or off shore, the subject venture should be stopped.

Sincerely

Egil D. Croff
31 Davis Brook Dr
Natick, MA 01760

Adams, Karen K NAE

From: kadak@earthlink.net
Sent: Thursday, February 24, 2005 12:16 PM
To: Energy, Wind NAE
Subject: Comments on Cape Wind Proposal

004874

Dear Army Corps of Engineers,

As an engineer, I am deeply concerned about the maintainability of these machines in a hostile salt air environment. Many of the existing land based wind farms have had trouble keeping the wind turbines operational in a environment that is generally dry and accessible. When one extrapolates this to a sea environment, I can only imagine that the experience would be significantly worse.

Having a poor performing wind farm would likely result in bankruptcy of the company leaving the abondoned wind farm further polluting the visual environment and possibly causing water pollution as these towers fall into disrepair. In the past, I have commented that a fully funded decommissioning trust be established before this project proceeds since collecting the money from operations or a bankrupt company will not be possible.

In addition, the decommissioning plan calls for removal of the seabed foundation to only 6 feet below the bottom. This is not sufficient since long term behavior of the sea bed could be dramatically be altered exposing the unsightly pilings. I recommend complete removal to be the requirement.

I find these massive wind towers to be a major assault on the evironment of Nantucket Sound. It is particularly offensive since there are clean energy sources available such as nuclear energy that could be used to replace this minimum amount of power at price that is lower than wind systems.

In short, I oppose this project but if it proceeds, the pilings should be completely removed and a fully funded decommissioning trust needs to be available prior to the start of construction.

Andrew C. Kadak
253 Rumstick Road
Barrington, RI 02806

Adams, Karen K NAE

From: Rich Rurum [rburum@hhbuilders.com]
Sent: Thursday, February 24, 2005 12:28 PM
To: Energy, Wind NAE
Subject: SUPPORT CAPE WIND

004875

ARMY CORP.

My name is Richard Burum and I am Writing to you today in regards to CAPE WIND.

I am in very much support of this issue and will help in any way I can so PLEASE

HELP AMERICA SAVE ENERGY

THANK YOU

RICH BURUM
44 SHERMANS WAY
MARSHFIELD MA 02050

Adams, Karen K NAE

From: Jonathan Hren [jonhren@yahoo.com]
Sent: Thursday, February 24, 2005 12:17 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

004876

I sincerely hope you consider heavily the profound benefit this wind farm will have on progressing our nation and our world towards renewable energy development and releasing our grip on fossil fuel burning. By supporting and allowing a project such as this, you are sending a clear positive message to the citizens of MA and of the US that we are concerned about our environment, we are concerned about becoming energy independent, and we are concerned about providing safe energy to the people, not to mention to our world as a whole. Please approve this initiative, by the examples of such great countries of England, Denmark, Germany, Spain and New Zealand, we would do ourselves a great favor in following their trends toward renewable energy growth. The effeciencies of the wind turbines are equal to if not greater than buring coal/gas.

Thank you.

Sincerely,

Jonathan Hren
4732 Forestbrook Dr
Copley, OH 44321

cc:
Capewind

Adams, Karen K NAE

From: Brown Susan [sbrownma@earthlink.net]
Sent: Thursday, February 24, 2005 12:35 PM
To: Energy, Wind NAE
Cc: lmartin@capewind.org
Subject: Support for Cape Wind Energy Project

004877

Greetings:

First , thank you in the Army Corps and all state and regional review agencies for the thoroughness of your work in the DEIS. I have read the Executive Summary, giving particular attention to pages 1-20 to-1-24. My areas of greatest interest are Air and Climate and Socioeconomics I **wish to be on your record in support for the Cape Wind Energy Project.**

What is written below is the heartfelt plea of one 72 year-old great- grandmother. You may not have time or interest in reading it. If so, please just count me in favor of the project.
****
This is just one of many messages I have written and spoken in support of the Cape Wind project. I signed in at a public hearing in Boston in March 2002. In January 2004 I
went with others from Cape Cod to Denmark to find out for myself how local sea-coast people had been impacted by the off-shore installation of 80 wind turbines at Horns Rev.
My family are from Harwich, Massachusetts, and one of my concerns about the Nantucket Sound project has been for local Cape Codders, their livelihoods, and the effects of a wind park on the year-round economy for the natives. I'm proud to come from Cape Cod.

Conversations in Denmark and subsequent research have assured me of the positive advantages of many new jobs, a growing economy based on renewable energy, cleaner air and water with the potential of enhanced health for all, Cape Codders and visiting tourists. For while aware of the role of tourism for the Cape, I also have great interest in the health of those who live there year round. Four generations of my family are in Barnstable County now.

Growing up, I saw the light on Bishop and Clerk on many clear nights. Point Gammon off Hyannis was the furthest spit of land we saw along the horizon to the southwest. Given the location in the Sound of the wind farm on Horseshoe Shoals, I will not see the wind turbines from my home in Harwich Port. I still see seasonal fish weirs I learned to sail around in the summertime of the 1940s. Any young yachtsman could sail the waters safely between the proposed wind turbines, which are to be spaced many football fields apart.

Frankly, I've grown angry with the people who worry about their view and their property values. To me it's ironic that the **Cape Cod National Sea Shore**, which President Kennedy worked to have included in our park system, now **has the third worst air pollution of all the national parks.**

If a few people who live or summer on the Cape and Islands could look to Nantucket

Sound and see some wind turbines, they and we all will have a better chance for a future. The grave threat that accelerated climate change presents to the whole world increasingly motivates me in this endorsement of the Cape Wind project.

This is one of those instances where people can think globally and act locally. Last week over 140 countries began to observe the Kyoto Protocol, taking a first step toward reducing the carbon pollution of global warming. Continued dependence on fossil fuels is not an answer for our human health or the national security or the global environment. I am reminded of how important the building of the Cape Wind Energy Project is. It can be one small and significant strategic step that we here in New England take to care for the land we have loved and all its creatures.

I will ask some of the people elected to federal and state offices to reconsider their public opposition to the project.

I request your support in the next phase of review. Thank you very much for your time and attention in considering this plea.

Sincerely yours,

Susan D. Brown
85 Crescent St. 15 Davis Lane
Waltham MA 02453 Harwich Port MA 02646

Adams, Karen K NAE

From: HelenMikehughes@aol.com
Sent: Thursday, February 24, 2005 12:38 PM
To: Energy, Wind NAE
Subject: Cape Wind Project

004878

I'm opposed to issuing a permit for the Cape Wind Project at this time, because:

- I don't feel the Army Corps, or anyone, has sufficient experience with this type of project to be aware of all the risks. Why take this great a gamble with such a precious body of water?

- It seems that the only benefit goes to Cape Wind. They get use of a great resource for nothing, with little benefit,certainly, to Cape Cod. Jim Gordon has already said that the electricity generated by the turbines will be fed into a primary power grid off the Cape.

- Not all the individuals and organizations opposed to this project can be wrong. If the governor, members of congress, and most of the state and municipal towns and agencies concerned are opposed, I can't believe it makes sense to proceed.

Please either deny or delay the issuance of this permit until more effective federal controls are in place.

Thank You,

Michael Hughes
Osterville,MA

Adams, Karen K NAE

From: Darien Gardner [darien@crocker.com]
Sent: Thursday, February 24, 2005 12:40 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams: 004879

Dear Sir,

It is critically important that you support the Cape Wind project.
Please do!

Darien Gardner
darien@crocker.com

Sincerely,

Darien Gardner
51 Pilgrim Drive
Northampton, MA 01060

cc:
Capewind

Adams, Karen K NAE

From: Theodore J. Giletti [tgiletti@bancobai.co.ao]
Sent: Thursday, February 24, 2005 12:44 PM
To: Energy, Wind NAE
Subject: Nantucket Wind Energy Project

054880

Dear Sirs:

I wish to lodge my official objection to the project being proposed by Cape Wind. I believe it suffers from numerous problems of which I highlight some below. Many questions still need to be asked and answered before a green light could even be considered as a possibility. Clearly much more time and a broader forum is needed to properly evaluate the complete aspects of this project.

I totally disagree that the USACE should have the ability to make a decision which would in effect place them over the federal or state governments in allowing such a project to go ahead.

By way of background I own a home in Nantucket at 47 Centre Street. I have been involved professionally in structured finance activities in the emerging markets for more than 25 years. During this time I headed up teams at some of the top international investment banking groups in New york and London. We structured finance and also provided advisory services for energy projects and energy clients in the emerging markets. At present I am on the investment committee of a private equity fund and on the board of an investment management company. I am also involved as a full time director of a bank.

1. PROJECT SPONSOR - It not clear who is the project sponsor other than it being some random investors from Long Island. What are their professional backgrounds? Track record? Who is politically tied in with them and who are their other shareholders? Clearly lack of technical skills or depth of such compentencies is straightaway a reason to throw out such a massive potential project.

2. FINANCIAL CAPITAL - What is the financial position of the sponsor group? As far as I can tell they have little to no capital themselves and instead are relying on grants and other "handouts" from the federal government and other state subsidies which might subsequently become available. This is an area of great concern to me since my experience shows that there is always a time for reliance on this capital and this is the most obvious weakness in a project.

3. COST PROJECTIONS - Whatever the projections and I have not yet had a chance to review these, experience in such large scale project shows again and again and again that there will be significant cost-overruns. Generally, these are well beyond anyone's imagination when looking at such massive projects.
Who picks up the bill? Not the taxpayer I hope!

4. ENVIRONMENTAL ISSUES - There are countless reasons covering fishing, pollution, etc. which all rule against this project. What about interference with air traffic locally and also boating? These towers are massively high and with large wingspan of the propellers.

5. LEGAL - It is not clear that complete due process has been followed in reviewing this proejct with the State and all apropriate Federal agencies and departments. In the absense also of a complete environmental and energy policy for such projects this is all the more reason for a full due process to be carried out. It is UNACCEPTABLE that the USACE is the deciding body to rule on this proejct - especially given all the issues related to it.

6. COST/BENEFIT - What is the real bottom line benefit to the public with this project? I have never seen anything on this. Also from experience with projects in other countries it should be borrne in mind that the actual cost of the electricity which is generated will have to be in excess of that which is otherwise being produced. This is the experience in many other countries with wind energy projects. In fact in some countries they find that the wind projects are being scaled back or removed.

7. ABANDONMENT - Who pays the cost in case the project is un-wound? Typically there is a sinking fund put aside to cover such an eventuality.

Bottom line I think the process being carried out is wrong and incomplete, the project is in the wrong place, and there are too many associated issues which mitigate against it.

Yours truly,

Ted Giletti

Tel 203 919 0222

Adams, Karen K NAE

From: stuartjcr@comcast.net
Sent: Thursday, February 24, 2005 12:45 PM
To: Energy, Wind NAE
Cc: comments@saveoursound.org
Subject: nantucket sound industrialization

004881

I am writing to express my profound reservations regarding the proposed industrialization of Nantucket Sound. Certainly noone with the least amount of common sense would trivialize the future of wind powered generation of electricity-however-certainly noone should trivialize the importance of Nantucket Sound's ecosystem either. I implore you to please consider the ramifications of this 25 square mile facility using the Army Corps of Engineers' past experience with the draining of the Everglades National Park for the profit of private industry. Sincerely, John Stuart 182 Rte 6a Yarmouthport, Ma. 02675

Adams, Karen K NAE

From: Lara Berkoski [lara8@earthlink.net]
Sent: Thursday, February 24, 2005 12:46 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004882

Dear Ms. Karen Kirk-Adams:

I strongly support the Cape Wind project. Wind power is a brillant option for creating a a more varied, larger pool of energy. The fact is that we as a nation feel we need greater amounts of energy every year. As long as people and corporations are resistant to the simple concept of "conserving" we must keep finding new ways to meet that demand. Conventional sources such as coal, oil, gas, etc., are limited. Why are people more willing to allow oil developers to ravage the Arctic Refuge for a relatively puny payback, but opposed to what many see as kinetic sculpture off our inhabited shores for a renewable, friendly source of power?
The United States used to be the 'super power' of the world. Things are surely in a state of flux - one way that the US could reconfigure and work towards being a role model for the world is to use the great knowledge and technology we have to illustrate that there is another option...renewable energy...it's there for the taking. Japan, an island nation always limited in it's resources, came to the conclusion that renewable energy must create a large portion of it's energy pool using renewable resources. They along with Europe have left us in the dust.
I am sure that many would say it's easy for me to say this about the cape while I sit in Vermont, but we actually have these same debates going on in my town. The towers are proposed on a ridge instead of off the Cape. Similarly, some people are opposed, some support. Yes, in a very localized area there would be an environmental impact, but I feel the lessening of the burden on the greater environment by creating clean energy far outways any negative impacts.
I drive a Toyota Prius gas /electric hybrid car and am in the beginning phases of retrofitting my house with solar collectors to heat water and in turn heat my home. Whatever we can do as individuals is fantastic, but the idea of a project of this scale is quite exciting and Massachusettes would be proud to boast being it's creator and home.
I commend all the people working at the draftingboards as well as within the communities to help bring this project to life. I hope with all my heart that it does come to fruition.

Sincerely,

Lara Berkoski
70 Middletown Rd
South Londonderry, VT 05155

cc:
Capewind

Adams, Karen K NAE

From: Dennis Jackson [dj@broadcast.net]
Sent: Thursday, February 24, 2005 12:47 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004883

Dear Ms. Karen Kirk-Adams:

Our family are seasonal residents of Oak Bluffs on Martha's Vineyard. We are in fovor of the Cape Wind proposal for wind turbines in Nantucket Sound, where we would be able to make them out from our deck.

We feel this project is an important step in the direction this country needs to take toward renewable energy and self-sufficiency. It has been exhaustively studied from every perspective, and it is all to the good with virtually no significant downside.

We are also dismayed at the misrepresentations and hyperbole put forth by the opponents of this project, whose positions are are the misguided albeit well-organized efforts of "NIMBY-ists." These selfish people are against any change, no matter how beneficial to society, regardless of the fact that any impact on their lives is utterly superficial and purely subjective. These opponents even had Walter Cronkite persuaded to support them until the pre-eminent statesman of credible journalism took a closer look at the facts and withdrew his opposition, saying he had been duped. Please do not make the same mistake!

We ask that you give your full support the Cape Wind Project.

Sincerely,

Dennis Jackson
19 Boas Lane
Wilton, CT 06897-1301

cc:
Capewind

Adams, Karen K NAE

From: Joshua Force [joshua.force@maine.edu]
Sent: Thursday, February 24, 2005 12:48 PM
To: Energy, Wind NAE
Subject: In support of the Cape Wind Project

004884

I strongly support the construction of the Cape Cod wind project. I believe that it is an essential step towards a future that has a far lesser reliance on nonrenewable fuels.

I hope that this campaign is a success.

Please take all the messages of this nature into consideration as a decision is made.

joshua.force@maine.edu -207.841.4250- University of Southern Maine
645 Congress St. Portland, Me 04101

Adams, Karen K NAE

From: JBGabriel@aol.com
Sent: Thursday, February 24, 2005 1:04 PM
To: Energy, Wind NAE; anne.cannaday@state.ma.us
Cc: comments@saveoursound.org
Subject: Opposition to Wind Farm in Nantucket Sound

004885

I would like to go on record in the strongest possible terms as **opposing** the proposed "Cape Wind" wind farm in beautiful Nantucket Sound.

I oppose the wind farm because I believe that Nantucket Sound is a national treasure. I believe that the erection of a wind farm on Nantucket Sound would adversely affect the tourist industry on the Cape and the Islands. Just as one should not erect a wind farm in the Grand Canyon, one also should not erect a wind farm on Nantucket sound.

Sincerely,

J. Bruce Gabriel
Captain, Armor, USAR (retired)
45 Hayden Street
Marlborough, Massachusetts 01752

Adams, Karen K NAE

From: Gray Harrison [harrisog@charter.net]
Sent: Thursday, February 24, 2005 1:02 PM
To: Energy, Wind NAE
Subject: Approve Wind Power

004886

Come on people, if we don't move away from the oil/coal economy we're never going to clean up the world. Approve the windmills!

Gray Harrison
407 Princeton Street
Jefferson, MA 01522

Framework for Environmental Health Risk Management

The Presidential/Congressional Commission on Risk Assessment and Risk Management

Final Report
Volume 1
1997

The Commission's Risk Management Framework

What Is Risk Management?

During the last 25 years, our nation has made tremendous progress in improving the quality of our environment and our workplaces, as well as the safety of pharmaceutical drugs, food, and other consumer products. Much of this progress has relied, explicitly or implicitly, on a process called *risk management*.

Risk management is the process of identifying, evaluating, selecting, and implementing actions to reduce risk to human health and to ecosystems. The goal of risk management is scientifically sound, cost-effective, integrated actions that reduce or prevent risks while taking into account social, cultural, ethical, political, and legal considerations.

Our definition of risk management is broader than the traditional definition, which is restricted to the process of evaluating alternative regulatory actions and selecting among them. In recent years, the scope and tools of risk management have broadened considerably beyond regulatory actions taken by federal, state, and local government agencies, for two reasons:

- Government risk managers now often consider both regulatory and voluntary approaches to reducing risk. This is particularly important as our society is challenged to solve more complex risk problems, especially those that cut across environmental media, with limited resources.
- Increasingly, risk management is being conducted outside of government arenas, by individual citizens, local businesses, workers, industries, farmers, and fishers. This decentralization has resulted in part from the growing recognition that decision-making is improved by the involvement of those affected by risk problems ("stakeholders").

What Is "Risk"?

Risk is defined as the probability that a substance or situation will produce harm under specified conditions. Risk is a combination of two factors:

- The **probability** that an adverse event will occur (such as a specific disease or type of injury).
- The **consequences** of the adverse event.

Risk encompasses impacts on public health and on the environment, and arises from **exposure** and **hazard**. Risk does not exist if exposure to a harmful substance or situation does not or will not occur. Hazard is determined by whether a particular substance or situation has the potential to cause harmful effects.

The Commission's Risk Management Framework

Risks to human health can come from many sources: industrial facilities, combustion engines, and different media—air, water, or soil.

During the traditional risk management process, decision-makers (typically government officials and other risk managers) gather information about a situation that poses or may pose a risk to human health and to ecological health. Air pollution, water pollution, workplace exposures, and the introduction of new pharmaceutical or consumer products are examples of situations that could pose risks to health or the environment. Risk managers use this information they have gathered to consider the:

- Nature and magnitude of risks.
- Need for reducing or eliminating the risks.
- Effectiveness and costs of options for reducing the risks.

In some cases, risk managers also consider the economic, social, cultural, ethical, legal, and political implications associated with implementing each option, as well as any worker health, community health, or ecological hazards the options may cause. In other cases, laws or procedures hinder risk managers from considering those implications and impacts.

The Need for a More Comprehensive Approach to Risk Management: The Commission's Risk Management Framework

In the environmental arena, statutes and legal precedents tend to dictate risk management approaches that focus on one type of risk (e.g., cancers or birth defects in humans) posed by a single chemical in a single medium (air, water, or land). Conclusions about risk are based almost exclusively on observations of toxicity from high doses of the chemical in laboratory animals or in the workplace. While these approaches have contributed to tremendous progress in reducing health, safety, and environmental risks in recent decades, they are not adequate for addressing the more complex risk problems we now face.

Creative, integrated strategies that address multiple environmental media and multiple sources of risk are needed if we are to sustain and strengthen the environmental improvements and risk reduction our nation has attained over the last 25 years. To help meet these needs, the Commission has developed a systematic, comprehensive Risk Management Framework, illustrated and summarized on page 3.

Framework for Risk Management

The Commission's Framework is designed to help all types of risk managers—government officials, private sector businesses, individual members of the public—make good risk management decisions (see "Principles for Risk Management Decision-Making" on page 4). The Framework has six stages:

Define the **problem** and put it in **context**.

Analyze the **risks** associated with the problem in context.

Examine **options** for addressing the risks.

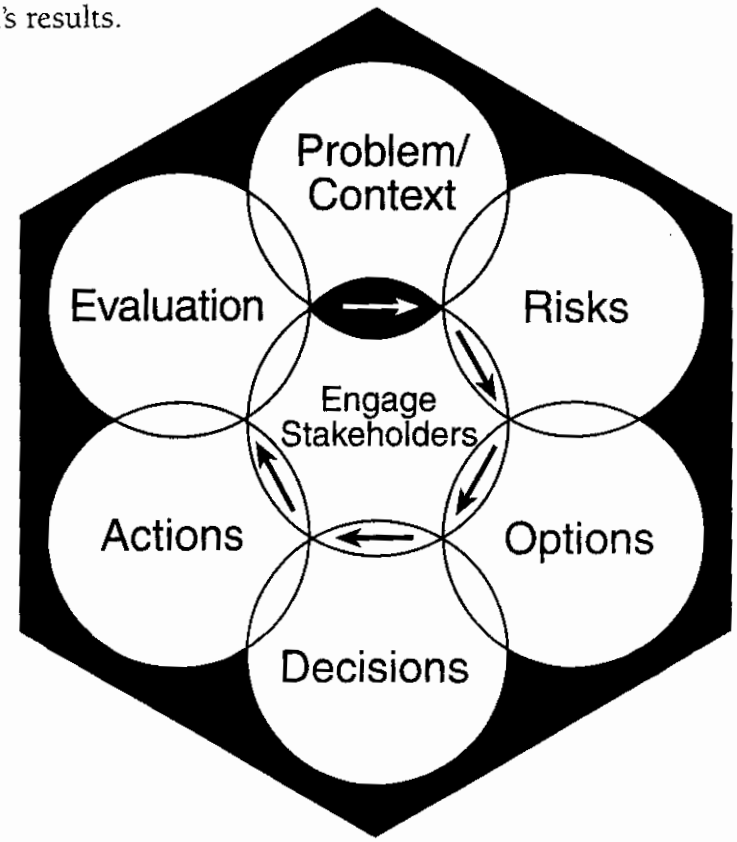
Make **decisions** about which options to implement.

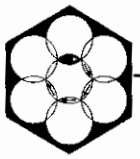
Take **actions** to implement the decisions.

Conduct an **evaluation** of the action's results.

The Framework is conducted:

- In **collaboration** with stakeholders.
- Using **iterations** if new information is developed that changes the need for or nature of risk management.





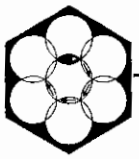
The Commission's Risk Management Framework

The Framework is general enough to work in a wide variety of situations. The level of effort and resources invested in using the Framework can be scaled to the importance of the problem, potential severity and economic impact of the risk, level of controversy surrounding it, and resource constraints. The Framework is primarily intended for risk decisions related to setting standards, controlling pollution, protecting health, and cleaning up the environment. It is useful for addressing these types of decisions at a local community level (e.g., siting an incinerator or cleaning up a hazardous waste site) or a national level (e.g., developing a national program for controlling motor vehicle emissions). The Framework need not be invoked for risk situations that are routinely and expeditiously managed—for example, by hazardous

Principles for Risk Management Decision-Making

A good risk management decision . . .

- Addresses a clearly articulated problem in its public health and ecological context.
- Emerges from a decision-making process that elicits the views of those affected by the decision, so that differing technical assessments, public values, knowledge, and perceptions are considered.
- Is based on a careful analysis of the weight of scientific evidence that supports conclusions about a problem's potential risks to human health and the environment.
- Is made after examining a range of regulatory and nonregulatory risk management options.
- Reduces or eliminates risks in ways that:
  - Are based on the best available scientific, economic, and other technical information.
  - Account for their multisource, multimedia, multichemical, and multirisk contexts.
  - Are feasible, with benefits reasonably related to their costs.
  - Give priority to preventing risks, not just controlling them.
  - Use alternatives to command-and-control regulation, where applicable.
  - Are sensitive to political, social, legal, and cultural considerations.
  - Include incentives for innovation, evaluation, and research.
- Can be implemented effectively, expeditiously, flexibly, and with stakeholder support.
- Can be shown to have a significant impact on the risks of concern.
- Can be revised and changed when significant new information becomes available, while avoiding "paralysis by analysis."



The Commission's Risk Management Framework

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affected by the risk management problem—is critical to making and successfully implementing sound, cost-effective, informed risk management decisions. For this reason, the Framework encourages stakeholder involvement to the extent appropriate and feasible during all stages of the risk management process. "Establish a Process for Engaging Stakeholders" on page 15 discusses in depth the value of and approaches to involving stakeholders.

Iteration. Valuable information or perspective may emerge during any stage of the risk management process. This Framework is designed so that parts of it may be repeated, giving risk managers and stakeholders the flexibility to revisit early stages of the process when new findings made during later stages shed sufficiently important light on earlier deliberations and decisions. ("The Importance of Iteration" on page 47 provides more information.)

AMERICAN COUNCIL ON
RENEWABLE ENERGY (ACORE)

February 18, 2005

4900

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Environmental Policy Act Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

Dear Secretary Herzfelder and Director Kirk-Adams:

On behalf of the American Council On Renewable Energy (ACORE), I am writing to you to voice support for the Cape Wind project.

Our current energy situation is untenable. For instance:

- Oil imports are increasing yearly, leaving our country exposed increasingly to the need for war to keep the lifeline open.

- Natural gas supplies have peaked and we are now planning billions of dollars of investment in LNG import facilities, again leaving us open to international instabilities and disruptions.

- Coal is our mainstay energy source, but we are coming to grips with the fact that coal combustion dirties our air by particulate, SOx, and NOx emissions; causes global warming through CO2 emissions; acidifies our lands and waters; and damages human health through mercury emissions.

- Nuclear power is a promised solution, but the fact is that the nuclear power industry has not developed a fuel reprocessing or waste disposal solution that the public has accepted, and hence there has not been a new order for a nuclear power plant for 26 years, fully a generation.

American Council On Renewable Energy
AMERICAN COUNCIL ON RENEWABLE ENERGY
1825 I Street NW, Suite 400, Washington, DC 20006
P.O. Box 33518 • Washington, DC 20033-3518 • www.AmericanRenewables.org
www.acore.org
American Council On Renewable Energy is variously referred to as 'ACORE'

ACORE is not politically against those options, indeed ACORE is simply for renewable energy. We believe that, if we do not turn to renewable energy solutions, we will be digging deeper into the hole we have dug – more imported energy, more environmental destruction, and more risk to our economic stability. It is time to stop digging that hole. Renewable energy offers a way out.

Wind power offers naturally-occurring energy in return for our investment of capital. It is pollution-free energy. It is economical after accounting for the lack of environmental degradation. The installation of the equipment brings local jobs and economic prosperity – these are not dollars that flow overseas. It is a winning scenario.

In addition to the technical points made in the preceding paragraphs, I would like to add some perspective, because I feel especially strong about Cape Wind. I was born in Chelsea, Massachusetts, went to school in Cambridge, have had business offices in Boston, Waltham and Sterling, and have vacationed on Cape Cod (South Harwich and Hyannis – the Cape Wind view-shed) since 1966, Nantucket since 1980, and Martha's Vineyard since 1990. I am a sailor, a member of the Maryland Waterman's Association (the professional fisherman of the Chesapeake Bay), and an admirer of what is beautiful about the sea. I have known Jim Gordon for about 15 years, when I encountered him as a competitor in the non-utility power generation business. We are professional friends. So, all is not just detached analytical objectivity. It rarely is.

For these reasons, I, too, am concerned about the permanent installation of manufactured structures in a natural place of beauty like Nantucket Sound. I am concerned that we are gradually giving up nature to support our economic demands. We know that this is being debated in the case of Cape Wind.

However, as described in the draft EIS, it is a matter of balance. The wind towers are not natural, but they are less unnatural, I respectfully submit, than combustion-based power plants and smoke stacks, supported by the environmental degradation that is occurring, attendant to the mining and drilling and transportation of their fossil fuel supplies.

Indeed, I would submit that the installation of wind turbine towers is itself a demonstration of the public's desire to have less environmental degradation with economic growth. To place the towers in the playground of the Wall Street elite who are developing and financing the environmentally destructive oil, gas, and coal projects around the world is, I would say, perfectly fair and appropriate. It will be a yearly reminder, when they look out from their porches and from their yachts, that they could have done better, indeed, much better.

Just think of the massive amount of intellectual financial and legal talent that Wall Street is devoting to oil drilling in Africa and Asia, oil pipeline development across Russia and the FSU, coal mine expansions in West Virginia and China, and nuclear power development in France, Japan, and China. And then they want to summer on pristine Nantucket Sound.

No, Nantucket Sound is not the home of the poor nor the meek; it is not the haven of the regular people. It is in fact the playground of the rich, and, specifically, the Wall Street rich.

Therefore, as much as I love Nantucket Sound, I can envision no place on earth where it will be, for all of the reasons discussed here, more appropriate to build a wind farm – a clean source of energy for the surrounding community – and a demonstration that the wealthy might rethink what they are doing with their capital resources.

We believe that Cape Wind must be built because it will deliver clean, carbon-free electricity. It is where we, as a society, must go. There is no arguing this point. It is the fundamental, inescapable fact, that we as a society must gather the strength to do the right thing.

We endorse Cape Wind, and respectfully request that you approve it.

Thank you for your consideration.

Very truly yours,

Michael T. Eckhart
ACORE President

Cc: Board of Directors

PEOPLE'S
Power & Light

February 19, 2005

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms Kirk-Adams: 004901

People's Power & Light is a nonprofit organization dedicated to making energy more affordable and environmentally sustainable. Working in partnership with the Massachusetts Energy Consumers' Alliance, we operate buying groups for discount heating oil, biofuel, and green electricity for approximately 9000 members. We are advocates for energy policies that are pro-consumer and pro-environment.

Given our mission we have been watching the Cape Wind project for some time, but did not take a position other than going forward with the Draft Environmental Impact Statement, so that a reasoned assessment could be made of all the impacts of the proposed project. Now that we have reviewed the findings of the DEIS, our Board has voted to support the continued development of the project, while urging that continued studies be undertaken to both verify the initial findings and to provide additional data that might be useful for other offshore wind energy projects that might be proposed in the future.

To that end, we would like to make the following comments with regard to changes that should be incorporated into a final Environmental Impact Statement:

• We urge the Army Corps to adopt the recommendations of the Massachusetts Audubon Society for further data collection regarding potential impacts upon terns, winter fowl, passerines, and sea ducks, to the extent that such data collection would not delay the final EIS.

• We urge the Army Corps to provide additional detail and information on the impacts Cape Wind would have on energy prices for rate payers through out the region. In particular, we request additional detail on how Cape Wind might help mitigate natural gas prices increases, and impact the need to import natural gas into the region via LNG tankers.

• We urge the Army Corps to provide more detail on how energy consumers in the region might more directly benefit from the relatively flat price of electricity generated by the project. For example, by displacing more expensive sources of natural gas used for heating and process.

• The DEIS seems to generally assume that the energy from the project would be sold wholesale into the spot market. We therefore urge the Army Corps to consider whether other energy sales structures might provide even greater benefit to ratepayers, and/or compensate the local community for any perceived negative aspects of the project (for example, by selling the energy to residents of Cape Cod and the Islands only).

• We urge the Army Corps to provide substantially more detail on the costs of climate change to the regional economy, and therefore the cost/benefit of the Cape Wind project regarding impacts from climate change.

• We urge the Army Corps to provide analysis of how the Cape Wind project could facilitate and provide impetus for additional offshore wind projects in the region, thus reducing the costs, and thereby "retroactively" multiplying the benefits of the Cape Wind project. Similarly, we urge the Army Corps to analyze the impact not building the Cape Wind project might have on the further development of the offshore wind industry, and the lost opportunity of benefiting from these projects.

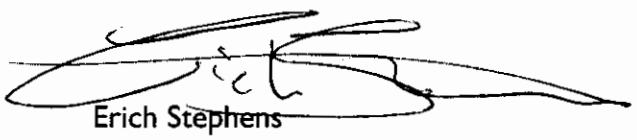
• We urge the Army Corps to provide additional detail and analysis as to how the Cape Wind project might impact the cost of compliance with the Renewable Portfolio Standards adopted by three of New England's six states.

• If the Cape Wind project is built, we anticipate that the cost of all renewable energy sources in the region will be reduced. We urge the Army Corps to analyze how such impacts could change the demand for voluntary purchases of renewable energy generally, providing a multiplier that might increase the benefits of the project beyond those immediately identified for the project itself.

We would like to take this opportunity to urge the Army Corps to not unduly penalize the Cape Wind project for being the first of its kind in the nation. Much of the tension around the Cape Wind project concerns private development in public waters. This is an important and legitimate concern that needs to be addressed by national and state policy makers in the near future, in anticipation of offshore wind project subsequent to Cape Wind. But given the findings of the DEIS, it is not a reason to slow the permitting process of the Cape Wind project.

Finally, for the record we note that People's Power & Light does not have a business relationship of any kind with the project developers.

Sincerely,



Erich Stephens
Executive Director

17 Gordon Ave #201A • Providence RI 02905
p.401.861.6111 • f.401.861.6115 • www.RIPower.org

HealthLink

Linking Health and the Environment

4 Sewall Street
Marblehead, MA 01945
www.healthlink.org

Fax: 781.639.8667
Phone: 781.639.8636
healthlink@healthlink.org

Our Mission:

To protect and improve public health by reducing and eliminating pollutants and toxic substances from our environment through research, education, and community action.

February 20, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

C04902

In support of Cape Wind

Dear Ms. Kirk-Adams:

For six years HealthLink has been working toward the cleanup of the emissions from the Salem Harbor Generating Station. We are dismayed, even appalled, at the number of respiratory and cardiovascular diseases and deaths caused by the dirtiest power plants in Massachusetts, as reported by Harvard's School of Public Health, and in the country as studied by Apt Associates. It is imperative that dirty grandfathered power plants all across the country be cleaned up as soon as possible. At the same time HealthLink believes it is critical to use energy efficiency and conservation measures to reduce our overly liberal consumption of fossil fuels.

During the past few years we have also spent thousands of volunteer hours learning about and educating the public about renewable energy. We have held several forums on renewable energy and wind power in particular. We recently received a grant from the Massachusetts Technology Collaborative to assess the current level of interest in wind power on the North Shore and to encourage the installation of wind turbines. We believe strongly that wind power must become a much larger part of the country's (and the world's) energy mix in order to decrease our dependence on burning fossil fuels. The costs to human health and our environment are far too high to continue to mine, drill, and burn the earth's rapidly depleting fossil fuel supply.

We have also written articles and spoken many times in the past few years in favor of Cape Wind's project, including individual testimony from members at recent Army Corps hearings. We have attended conferences on wind, visited Hull, Searsburg, and Princeton's turbines, and have kept abreast of the successes and temporary failures of the wind farms in Europe.

In Hull and Searsburg we have learned that tourism has increased, that property values have not been affected, and bird deaths there are minimal if at all. We have heard the same holds true for the beach community of Blaavand in Denmark, where tourism, with the addition of ecotourism, is now flourishing year-round because of the wind farm. We have also learned that even with a bird sanctuary nearby, birds are aware of the turbines and know to fly around them. They also forage for food at their bases, which provide artificial reefs for the benthic community, which then attracts fish.

We have studied the DEIS and are pleased that there will be minimal adverse effects to Nantucket Sound, to migrating birds, to air and ocean navigating, and to fishing (which might be enhanced), and that the benefits of the project to the region far outweigh the complaint of aesthetics: the creation of 600-1000 new construction jobs and 154 permanent jobs; reduced power plant pollution, with estimated health costs savings of $53 million annually; greenhouse gas emissions that will be reduced by more than a million tons a year.

Because wind is the most viable renewable energy source in the world today, a world which has become nearly irreversibly damaged from power plant emissions and gases, we at HealthLink support Cape Wind's courageous and enterprising project and hope that they will be able to move ahead toward its implementation as soon as possible.

Sincerely,

Jody Howard

Jody Howard
on Behalf of HealthLink

Town of Barnstable
Conservation Commission

200 Main Street
Hyannis Massachusetts 02601

Office: 508-862-4093 E-mail: conservation@town.barnstable.ma.us FAX: 508-778-2412

1/21/05

C04903

Karen Kirk- Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

Scott G. Blazis
4 Three Ponds Drive
Centerville, MA 02632

Dear Ms. Kirk Adams,

I am writing to voice my opposition to the wind powered electrical generating facility proposed for Nantucket Sound.

Before I relate the substance of my objections I would like to thank you and all members of the Army Corps of Engineers involved in this process. The large number of "boiler plate" communications that you must receive that repeat the same objections or support *ad nauseum* must make your task even more difficult. I assure you that this is not that type of letter.

I believe that a short Biography would assist you in evaluating the merits of my opinions. I am a Biologist with postgraduate experience in Marine Microbiology. My work with Cyanobacteria, and unicellular algae centers on symbiotic relationships with Horseshoe Crabs, (rather Ironic Given the proposed site name). The Town of Barnstable presently employs me as a Biology Teacher at Barnstable High School. In addition, I have been a resident of the Town of Barnstable nearly all my life, and presently occupy a seat on the Town of Barnstable Conservation Commission. In addition, I hold a Commission in the U.S. Merchant Marine, USCG# 997539, and Captain a charter fishing boat out of Lewis Bay Hyannis.

Let me make clear that the following comments represent my individual opinions and not those of The Town of Barnstable Conservation Commission as a whole.

Impacts to Wildlife: I feel that the DEIS is deficient in its analysis of impacts to wildlife in the following areas:

1. **Plankton**: The EIS drafted for a smaller project, the "Horns Rev" facility in Denmark documented local reduction of primary productivity of pelagic plankton, in addition to species changes. Multiple sources of pollution including copper contamination from the slip rings of the turbines were cited. As this plankton population supports a complex food web, it would be remarkable if this food web was not disrupted. The consequences to local recreational and commercial fishing in the area are unknown. The consequences to feeding patterns of state and federal listed endangered bird species that occupy the area are unknown.

2. **Sea Turtles:** This area is a summer feeding ground for several endangered species of Sea Turtles. I regularly observe during my activities as a charter boat Captain the following species:
   1) Kemp's Ridley
   2) Leatherback Turtle
   3) Loggerhead Turtle
   4) Green Turtle

   It has been documented that lighting can disrupt breeding, feeding, and migration of sea turtles. There are also probable impacts to these populations from noise, magnetic fields, plankton changes, and increased boat traffic. None of these issues have been addressed.

3) **Avian Mortality:** If one accepts the data from the DEIS, (I do not, as peer review is absent) approximately 300 "takings" or fatalities due to blade strikes can be expected. It is not known if the endangered species populations that utilize this area, either while migrating or feeding, specifically, Least and Common Tern, Roseate Tern,

Osprey, and Piping plover, can sustain the yearly impacts that are projected.

4) **Benthic changes:** No adequate study of the long-term impacts to shoaling patterns, and consequential changes in baitfish distribution has been done. The integrity of the ecosystem as a whole depends upon the changes in water velocity associated with shoals and tidal rips. In addition changes in plankton populations would be likely to result in changes in shellfish communities. Sediment plumes from construction, operation, and eventual decommissioning will affect benthic grain size and either smother, (sessile organisms) or dislocate, (mobile) adult organisms, or affect recruitment of juveniles.
5) **Cumulative impacts:** The conversion of a large portion of Nantucket Sound from Prime habitat for the previously mentioned organisms, to tertiary habitat, will place additional pressure on the remaining surrounding areas. Wildlife as well as human activities such as commercial and recreational fishing will shift to other shoals within Nantucket Sound. This additional pressure will deleteriously affect the wildlife values of these areas as well as their recreational and commercial value.

   Migrating finfish follow a predictable seasonal migration based on water temperature and baitfish availability. The migration sequence of importance to Nantucket Sound begins with shoals in Vineyard Sound, moving to Succonesset shoals, Horseshoe shoals, Bishops & Clerks, Hankerchief shoals, and finally Monomoy shoals. These areas are inextricably connected as links in a chain of food biomass and quality habitat. This chain is essential for the ecosystem as a whole in Nantucket sound. It is unfortunate that the shallow waters of Horseshoe Shoals that attracted the attention of Capewind for the purpose of siting wind turbines are also what attract wildlife. It is also ominous that Hankerchief shoals as well as Monomoy Shoals have been identified as possible alternative or future sites for development.

Impacts to Navigation: Others have objected to the proposed project as interfering with established ferry routes between Lewis Bay and Edgartown among others. I will restrict my comments to vessels of which I am familiar.

Small Boat Traffic: Horseshoe Shoals lie directly between Martha's Vineyard and ports in the Town of Barnstable and Yarmouth. The preferred route to Edgartown and Oak Bluffs would take one directly through the proposed facility.

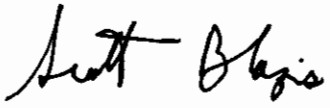
The spacing of the turbines makes this a serious navigational hazard during conditions of limited visibility, strong winds, heavy seas, and nighttime navigation. Small craft may avoid these towers in good conditions when radar functions well and visible or audible signals are perceivable. During inclement weather radar is problematic due to the pitching and rolling characteristic of craft less than 60 feet OAL. The ability of a Captain to pilot under these conditions while attempting to track visible aircraft beacons requires that the captain direct his attention away the immediate vicinity of his vessel. This is an undesirable situation. Combine this with vessels limited in their ability to maneuver, sailing vessels tacking to maintain a course, both recreational and commercial vessels engaged in fishing, and the result could be loss of life and property or loss of use of the watersheet, a public resource.

Alternatives: Little discussion has been devoted to alternative options for the development of wind power on Cape Cod. Land based turbines could be placed on existing power transmission easements, closed landfills, and other state, municipal and private lands with far fewer regulatory hurdles or environmental impacts.

In addition deep- water platform technology is less than a decade away and will be cheaper to build service and install. This technology will also have far fewer environmental impacts than near coastal installations.

Given the recent change in State water delineation, ambiguous or absent Federal guidelines, and unacceptable local impacts, I encourage you to conclude that the proposed project is premature and not permittable in its current configuration.

Sincerely,



Scott G. Blazis
Conservation
Commissioner

BUSINESS UPDATE

Cape 'Micronesia' Air

Hyannis airline's new venture represents 25 percent of revenue

Saipan and Rota are halfway around the world from Nantucket and Martha's Vineyard, but flights to those Micronesian islands are being monitored 24 hours a day from computers inside the hangar-like offices of Cape Air in Hyannis.

That business – on a route 14 time zones away – could double in the next year or two through a partnership between Cape Air and Continental Micronesia that began in July. Since then, the Guam-to-Saipan flights have withstood two typhoons, which is nothing out of the ordinary for Cape Air President Dan Wolf, whose staff had to maneuver around four hurricanes that beleaguered his Caribbean and Florida operations during the same period.

Cape Air currently has eight pilots stationed in the Marianas, plus a regional administrator who also is a qualified pilot, flying three ATR-42 aircraft that handle up to 46 passengers each – a far cry from the airline's fleet of 49 of the much smaller Cessna 402s. Those same Cessna 402s will be used for Cape Air's new Boston-to-White Plains, N.Y., service, which will begin Nov. 1 under an agreement with partner Continental Airlines.

Capt. Dan Wolf
President and CEO, Cape Air

"We've experienced a steep learning curve," said Wolf, but by its second month, the venture was flying 6,000 to 7,000 passengers a month, right on target. This represents a 25 percent growth for the entire airline, since the three ATR-42s – leased from Continental Airlines – are the equivalent of 15 Cessnas.

The Micronesia connection was launched without debt, financed entirely by accumulated retained earnings, Wolf said. The initiative, first proposed by Continental – a previous partner in Florida and the Caribbean – represented a total strategic shift for Wolf at a time, ironically, when his local landing rights at Logan International Airport were in doubt.

A proposed increase of $25 to $400 per landing under a new peak-pricing proposal by the Massachusetts Port Authority could have proven prohibitive to Cape Air's Cape and Islands service.

The Logan threat dissipated by the time Cape Air launched its Micronesia venture, partly through the help of Gov. Mitt Romney and his transportation secretary, Daniel A. Grabauskas, Wolf reported. About 35 percent of Cape Air's revenue comes from Boston service.

"We will operate in and out of Logan," Wolf told Cape Business. Limited service may be impacted during some periods, he acknowledged, especially flights to Provincetown, which does not have the same exemptions in place enjoyed by Hyannis and the Islands and is in jeopardy of being eliminated in the future.

The nervous times at Logan underscore the strategic importance of Cape Air's Micronesian connection. Diversifying is all the more important, Wolf said, since 9/11. Tourism has waned, while security measures have added more time and inconvenience to the very short flights that compete with a growing fleet of high-speed ferries.

Deep-sea wind farms could be a reality within a decade

Right now, the focus may be on a Nantucket Sound wind farm, but some policymakers are seriously considering wind turbines farther out to sea, away from any Cape Codder's backyard.

The U.S. Department of Energy has expanded the scope of the government's low-wind technology project, known as LWSB, to include proposals for development of sea-based wind energy technology.

GE Wind Energy, the nation's largest wind turbine manufacturer, is developing a 5-megawatt large-scale deep-water turbine.

Closer to home, the Massachusetts Technology Collaborative has launched discussion of an Offshore Wind Energy Collaborative involving the federal government, GE, the Woods Hole Oceanographic Institution and the Massachusetts Institute of Technology.

These turbines would be installed on floating platforms in waters at least 100 feet deep, compared with current limits of only 50 feet.

Some policy makers believe the deeper-water turbines could be a reality within eight to 10 years, raising the question: Does it make sense to await the deeper-water technology and pass on construction of turbines in the more politically sensitive Nantucket waters?

Inevitably, there are not enough shallow sites that can pass environmental muster closer to shore. So any real opportunity to expand wind technology will require deeper locations. The surprise may be the shorter time period needed to build farther out to sea.

"The global wind energy market is projected to grow from its current annual size of $8 billion to $47 billion in the next 10 years, with a major percentage of this invested in offshore facilities," the MTC wrote in a recent memo discussing the deep-water scenario.

"Ultimately, the goal is to overcome the barriers to developing systems for generating and delivering electricity from U.S. offshore wind farms at a cost of 5 cents per kilowatt hour or less by the end of the decade."

TOWN OF CHILMARK
CHILMARK, MASSACHUSETTS

TOWN OFFICES:
Beetlebung Corner
Post Office Box 119
Chilmark, MA 02535
(508) 645-2110 Fax

February 2005

004904

Colonel Thomas Koning
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Dear Colonel Koning:

On behalf of Chilmark, I am writing to express our formal opposition to the Cape Wind project and to the Draft Environmental Impact Statement (DEIS) released by the U.S. Army Corps of Engineers. Cape Wind's proposed project is not in the public interest, and the Corps' permit process is an insufficient mechanism under which to review such a proposal. Furthermore, the Corps has failed to give adequate voice to local government concerns. For those reasons, the Town of Chilmark objects to further review of this permit application. If the Corps continues to review the application, it should deny the permit.

The Army Corps has a duty to protect the public trust, in this case the open waters of Nantucket Sound. Approval of the Cape Wind power plant is a fundamental abdication of the Corps' trustee role, as the negative impacts of this proposed power project far outweigh its benefits. The public's interest is not served by allowing a private developer to take control of this public resource for private gain, while collecting millions in subsidies from taxpayers.

The Cape Wind project would have a negative impact on Chilmark and on the region as a whole. Local economies would suffer from a loss of tourism — the financial lifeblood for most of Southeastern Massachusetts — and from the job loss as a result of this decline in tourism. Moreover, another economic mainstay of the area, commercial fishing, would be seriously harmed by the project.

Property values in the region would decline because of visual impacts caused by the Cape Wind power plant. Historic properties would also be negatively affected. Another category of detrimental impacts of the development comes at the expense of the region's wildlife and environment. The Cape Wind development would have adverse effects on birds, some of which are federally protected, marine mammals, fish, and have an overall harmful effect on the Sound's ecosystem. Additionally, the power project is likely to sacrifice any chance of achieving the longstanding goal of designating the Sound as a national marine sanctuary.

The Town of Chilmark is also opposed to the process used by the Army Corps, as it does not give adequate voice to local concerns and is an improper avenue to approve such a project. An offshore wind energy development should be undertaken only with the cooperation of the communities it affects, adequately addressing the concerns of the affected local governments. Indeed, the Corps should heed the recent Executive Order of the President and facilitate cooperative conservation. *See* Exec. Order No. 13,352, 69 Fed. Reg. 52,989 (Aug. 26, 2004). The Army Corps should comply with President Bush's Order, and consider this as a collaborative activity between federal, state and local entities. The Corps has failed in this respect, and our Town's concerns have been given scant attention throughout this review process.

In conclusion, the Cape Wind project and the DEIS have many flaws. The adverse effects discussed above are not adequately or objectively considered in the DEIS. The project is not in the public interest and would have a damaging impact not only on Chilmark, but on the entire region. As such, Chilmark objects to the issuance of a permit for this proposal and requests that the Corps reject the application.

Kind regards,

cc: CongressmanWilliam Delahunt
Governor Mitt Romney
Massachusetts Attorney General Thomas Reilly
Senator Rob O'Leary
Representative Demetrius Atsalis
Anne Canaday, Mass. Environmental Policy Act
Phil Dascombe, Cape Cod Commission

Presidential Documents

Executive Order 13352 of August 26, 2004

Facilitation of Cooperative Conservation

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. *Purpose.* The purpose of this order is to ensure that the Departments of the Interior, Agriculture, Commerce, and Defense and the Environmental Protection Agency implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decisionmaking, in accordance with their respective agency missions, policies, and regulations.

Sec. 2. *Definition.* As used in this order, the term "cooperative conservation" means actions that relate to use, enhancement, and enjoyment of natural resources, protection of the environment, or both, and that involve collaborative activity among Federal, State, local, and tribal governments, private for-profit and nonprofit institutions, other nongovernmental entities and individuals.

Sec. 3. *Federal Activities.* To carry out the purpose of this order, the Secretaries of the Interior, Agriculture, Commerce, and Defense and the Administrator of the Environmental Protection Agency shall, to the extent permitted by law and subject to the availability of appropriations and in coordination with each other as appropriate:

(a) carry out the programs, projects, and activities of the agency that they respectively head that implement laws relating to the environment and natural resources in a manner that:

(i) facilitates cooperative conservation;

(ii) takes appropriate account of and respects the interests of persons with ownership or other legally recognized interests in land and other natural resources;

(iii) properly accommodates local participation in Federal decisionmaking; and

(iv) provides that the programs, projects, and activities are consistent with protecting public health and safety;

(b) report annually to the Chairman of the Council on Environmental Quality on actions taken to implement this order; and

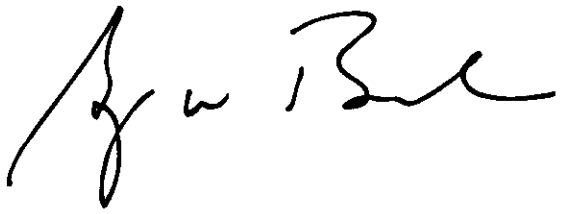
(c) provide funding to the Office of Environmental Quality Management Fund (42 U.S.C. 4375) for the Conference for which section 4 of this order provides.

Sec. 4. *White House Conference on Cooperative Conservation.* The Chairman of the Council on Environmental Quality shall, to the extent permitted by law and subject to the availability of appropriations:

(a) convene not later than 1 year after the date of this order, and thereafter at such times as the Chairman deems appropriate, a White House Conference on Cooperative Conservation (Conference) to facilitate the exchange of information and advice relating to (i) cooperative conservation and (ii) means for achievement of the purpose of this order; and

(b) ensure that the Conference obtains information in a manner that seeks from Conference participants their individual advice and does not involve collective judgment or consensus advice or deliberation.

Sec. 5. *General Provision.* This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, instrumentalities or entities, its officers, employees or agents, or any other person.



THE WHITE HOUSE,
August 26, 2004.

[FR Doc. 04–19909
Filed 8–27–04; 11:31 am]
Billing code 3195–01–P

TOWN OF CHATHAM

OFFICE OF THE SELECTMEN
TOWN MANAGER
549 Main Street, Chatham, Massachusetts 02633
(508) 945-5100

February 23, 2005

C04905

Colonel Thomas Koning
U.S. Army Corp of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Dear Colonel Koning:

On behalf of Chatham, I am writing to express our formal opposition to the Cape Wind project and to the Draft Environmental Impact Statement (DEIS) released by the U.S. Army Corps of Engineers. Cape Wind's proposed project is not in the public interest and the Corps' permit process is an insufficient mechanism under which to review such a proposal. Further, the Corps has failed to give adequate voice to local government concerns. For those reasons, the Town of Chatham objects to further review of this permit application. If the Corps continues to review the application, it should deny the permit.

The Army Corps has a duty to protect the public trust, in this case the open waters of Nantucket Sound. Approval of the Cape Wind power plant is a fundamental abdication of the Corps' trustee role as the negative impacts of this proposed power project far outweigh its benefits. The public's interest is not served by allowing a private developer to take control of this public resource for private gain, while collecting millions to subsidies from taxpayers.

The Cape Wind project would have a negative impact on Chatham and on the region as a whole. Local economies would suffer from a loss of tourism - the financial lifeblood for most of Southeastern Massachusetts - and from the job loss as a result of this decline in tourism. Moreover, another economic mainstay of the area, commercial fishing, would be seriously harmed by the project.

Property values in the region would decline because of visual impacts caused by the Cape Wind power plant. Historic properties would also be negatively affected. Another category of detrimental impacts of the development comes at the expense of the region's wildlife and environment. The Cape Wind development would have adverse effects on birds, some of which are federally protected, marine mammals, fish, and have an overall harmful effect on the Sound's ecosystem. Additionally, the power project is likely to sacrifice any chance of achieving the longstanding goal of designating the Sound as an national marine sanctuary.

The Town of Chatham is also opposed to the process used by the Army Corps as it does not give adequate voice to local concerns and is an improper avenue to approve such a project. An offshore wind energy development should be undertaken only with the cooperation of the communities it affects, adequately addressing the concerns of the affected local governments. Indeed, the Corps should heed the recent Executive Order of the President and facilitate cooperative conservation. See Executive Order No. 13,352,69 Fed. Reg. 52,989 (August 26, 2004). The Army Corps should comply with President Bush's Order and consider this as a collaborative activity between federal, state and local entities. The Corps has failed in this respect and our Town's concerns have been given scant attention throughout this review process.

In conclusion, the Cape Wind project and the DEIS have many flaws. The adverse effects discussed above are not adequately or objectively considered in the DEIS. The project is not in the public interest and would have a damaging impact not only on Chatham, but on the entire region. As such, Chatham objects to the issuance of a permit for this proposal and requests that the Corps reject the application.

Sincerely,

Douglas Ann Bobman, Chairman

David R. Whitcomb, Vice-Chairman

Deborah Connors, Clerk

Ronald J. Bergstrom

Sean Summers

cc: Congressman William Delahunt
Governor Mitt Romney
Attorney General Thomas Reilly
Senator Rob O'Leary
Representative Demetrius Atsalis
Anne Canaday, Massachusetts Environmental Policy Act
Phil Dascombe, Cape Cod Commission

Mrs. Patricia Breiter
2464 Hilltop Road
Niskayuna, NY 12309
February 22, 2005

CC-5906

Colonel Thomas Koning,
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Dear Sir:

Enclosed are two editorials from the Nantucket, MA. "Inquirer and Mirror" that express many concerns regarding the proposed wind farm in Nantucket Sound.

I have additional concerns that follow:

I recall reading, early, that the first response by the Army Corps of engineers to this proposal was to direct the proponents to find a more appropriate location. Why was this not done?

In Denmark wind turbines are thoughtfully placed to not interfer with intense recreational and commercial use.

England is developing wind farms placed out-of-the-way, out-to-sea. As reported in the "New York Times, International" (12-19-03) - the Royal Society for the Preservation of Birds is asking the government to verify that wind farms do not pose a threat to birds. (They favor proper placement of wind farms.)

Mr. Mark Avery of that group states that, of course, birds have died flying into turbines. He also points out that it might "not make sense to construct a large number of objects where large numbers of birds are already flying"!

Quick focus on the present controversy:

* In North America two major north-south flyways meet and cross over the Cape Cod area. One flyway comes north flying over the ocean and then landward over Cape Cod. The second flyway follows the east coast over land continuing toward Maine and Canada. These two flyways meet and cross paths over the area in dispute. If these giant turbines were constructed here, thousands, (not just one), of birds would be killed.

Another concern:

At times this area experiences zero visability. These high towers and their cement island bases pose dangerous obstacles to the many boats and planes. Strobe lights and blaring fog horns are useless warnings when the fog is that thick.

Another concern:

The economic return to various groups is inequitable. The builders would reap large profits at public expense, subsidized by tax credits and free (not leased) use of public land.

The thirty-five cents saved monthly on electric bills by each household does

not make up for economic losses to those depending on tourism for a living. I feel that those turbines would be an aesthetic blight, interrupting the restful solitude sought by millions of people who visit this area every year — people from every state of the union and many foreign countries.

Why should the private profits of a few individuals, from a project promoted by paid lobbyists, be considered more important than the unsullied beauty and unrestricted use of an historic, world-renowned, unique natural resource — Nantucket Sound — valued by millions of people?

I hope the Army Corps of Engineers will comprehensively study and thoughtfully plan the placement of wind farms in the state and national waters bordering our country before making quick decisions. no wind farm should interfer in areas of intense public use.

As you suggested earlier, there are more appropriate places for this project than Horseshoe Shoal!

Sincerely,

Mrs. Patricia Breiter

Copies to:
Karen Kirk Adams
Senator Ted Kennedy
Governor Mitt Romney

GEOPHYSICAL RESEARCH LETTERS, VOL. 31, L24103, doi:10.1029/2004GL021216, 2004

4907

Effects of future climate change on regional air pollution episodes in the United States

L. J. Mickley, D. J. Jacob, and B. D. Field
Division of Engineering and Applied Science, Harvard University, Cambridge, Massachusetts, USA

D. Rind
Goddard Institute for Space Studies, New York, New York, USA

Received 6 August 2004; revised 1 November 2004; accepted 22 November 2004; published 28 December 2004.

[1] We examine the impact of future climate change on regional air pollution meteorology in the United States by conducting a transient climate change (1950–2052) simulation in a general circulation model (GCM) of the Goddard Institute of Space Studies (GISS). We include in the GCM two tracers of anthropogenic pollution, combustion carbon monoxide (COt) and black carbon (BCt). Sources of both tracers and the loss frequency of COt are held constant in time, while wet deposition of BCt responds to the changing climate. Results show that the severity and duration of summertime regional pollution episodes in the midwestern and northeastern United States increase significantly relative to present. Pollutant concentrations during these episodes increase by 5–10% and the mean episode duration increases from 2 to 3–4 days. These increases appear to be driven by a decline in the frequency of mid-latitude cyclones tracking across southern Canada. The cold fronts associated with these cyclones are known to provide the main mechanism for ventilation of the midwestern and northeastern United States. Mid-latitude cyclone frequency is expected to decrease in a warmer climate; such a decrease is already apparent in long-term observations. Mixing depths over the midwest and northeast increase by 100–240 m in our future-climate simulation, not enough to compensate for the increased stagnation resulting from reduced cyclone frequency. *INDEX TERMS:* 0345 Atmospheric Composition and Structure: Pollution—urban and regional (0305); 0368 Atmospheric Composition and Structure: Troposphere—constituent transport and chemistry; 1610 Global Change: Atmosphere (0315, 0325). **Citation:** Mickley, L. J., D. J. Jacob, B. D. Field, and D. Rind (2004), Effects of future climate change on regional air pollution episodes in the United States, *Geophys. Res. Lett.*, *31*, L24103, doi:10.1029/2004GL021216.

1. Introduction

[2] Long-term projections for surface air quality in the United States must account not only for future changes in emissions but also for changes in climate. The frequency of pollution episodes varies considerably from year to year depending on weather [e.g., *Vukovich*, 1995; *Lin et al.*, 2001], pointing to the potential importance of climate change. Several model studies have examined the sensitivity of ozone and aerosols to changes in temperature and humidity [*Bufalini et al.*, 1989; *Sillman and Samson*, 1995; *Aw and Kleeman*, 2003]. More important may be the sensitivity to changes in mixing depths, frequency of stagnation episodes, and synoptic-scale circulations [e.g., *Logan*, 1989; *Vukovich and Sherwell*, 2002]. We explore these effects here with a general circulation model (GCM) transient simulation of 2000–2050 climate change.

[3] We focus on the eastern and midwestern United States where pollution episodes tend to extend over regional scales greater than 500,000 km^2 [*Logan*, 1989; *Eder et al.*, 1993], in contrast to the more mountainous west where they tend to be local and affected by topography [e.g., *Pun and Seigneur*, 1999; *Winner and Cass*, 1999]. Regional pollution episodes in the east and midwest are associated with slowly moving high pressure systems with restricted boundary layer ventilation [e.g., *Schichtel and Husar*, 2001; *Hogrefe et al.*, 2004]. The episodes are terminated by mid-latitude cyclones traveling eastward across southern Canada [*Dickerson et al.*, 1995; *Merrill and Moody*, 1996; *Stohl*, 2001]. The cold fronts associated with these cyclones sweep across the northern United States, lifting polluted air to the free troposphere in warm conveyor belts ahead of the front and replacing it with clean high-latitude air behind the front [*Cooper et al.*, 2001]. The fronts generally do not reach into the southeastern United States, and ventilation there is mostly driven by deep convection and inflow from the Gulf of Mexico (Q. Li et al., Outflow pathways for North American pollution in summer: a global 3-D model analysis of MODIS and MOPITT observations, submitted to *Journal of Geophysical Research*, 2004, hereinafter referred to as Li et al., submitted manuscript, 2004).

[4] Only a few GCM studies have examined the effect of climate change on pollution transport, and then only in a very general sense. *Rind et al.* [2001] found that increased convection in a doubled-CO_2 atmosphere led to improved ventilation of the continental boundary layer. *Holzer and Boer* [2001] found that weaker winds in a warmer climate led to higher concentrations in pollution plumes. We present here a more specific analysis of the effect of future climate change on the frequency and severity of pollution episodes in the United States. For this purpose, we use a GCM transient model simulation for 2000–2050 including two simple tracers of anthropogenic pollution, combustion carbon monoxide (CO) and black carbon aerosol (BC). Emissions for both tracers are held constant over the simulation, so that any trends in concentration are driven solely by climate change.

2. Methods

[5] We implemented the CO and BC tracers into the Goddard Institute for Space Studies (GISS) GCM 2' [*Rind*

0094-8276/04/2004GL021216$05.00

and Lerner, 1996; *Rind et al.*, 1999]. The GCM version used here has a "qflux ocean" [*Hansen et al.*, 1988] and a horizontal resolution of 4° latitude and 5° longitude, with nine vertical layers in a sigma coordinate system extending from the surface to 10 hPa. The three lowest layers are centered at about 260 m, 860 m, and 1900 m for an air column based at sea level. In the qflux model, monthly mean ocean heat transport fluxes are first calculated to generate observed, present-day sea surface temperatures. In subsequent simulations, sea surface temperatures and ocean ice respond to changes in climate, while the ocean heat transport fluxes are held fixed.

[6] The CO and BC tracers are denoted here as "COt" and "BCt" to emphasize their generic nature. The source of COt in the model is present-day fossil fuel CO emissions [*Wang et al.*, 1998], and COt loss is by reaction with OH as computed from present-day, monthly mean OH fields [*Mickley et al.*, 2004]. We ignore any perturbations to OH due to climate change [*Johnson et al.*, 1999; *Shindell et al.*, 2001] in order to isolate the effect of transport. The BCt source is present-day global BC emissions from *Park et al.* [2003]. BCt is assumed to be scavenged efficiently by wet deposition, which in our model follows the scheme of *Koch et al.* [1999].

[7] The transient climate simulation was performed from 1950 to 2052 with concentrations of the well-mixed greenhouse gases – CO_2, CH_4, N_2O, and halocarbons – updated yearly. For 1950–2000 we used observations [*Hansen et al.*, 2002]. For 2000–2052 we used the A1B scenario from the Intergovernmental Panel on Climate Change (IPCC), with CO_2 as implemented in the Bern-CC model [*Houghton et al.*, 2001]. For future halocarbons we followed *Hansen et al.* [2002]. We fixed ozone and aerosol concentrations in the radiative scheme at present-day climatological values.

[8] Results for the years 1995–2052 were analyzed. The long spin-up time allows the calculated sea surface temperatures to adjust. From 1995 to 2052 we calculate a globally averaged surface temperature increase of 1.9°C, corresponding to a forcing of 2.1 W m^{-2}. Precipitation rates over the southeastern United States decrease by as much as 20% in summer, but increase by 20% in winter due to increased southerly transport of moist tropical air. Elsewhere in the United States, precipitation rates do not change significantly in the future scenario. Analysis of model results focuses on daily mean concentrations. Because the vertical resolution of the boundary layer is coarse, simulated surface air concentrations show little diurnal variation and are most representative of daytime conditions, when the mixed layer is deep [*Jacob et al.*, 1993a].

3. Results

[9] For the present-day period 1995–2002, surface COt concentrations over the United States range from 50–150 ppb in summer to 150–200 ppb in winter. These are lower than observed CO concentrations since we have not included biomass burning or chemical production as sources of COt. A more complete tropospheric chemistry simulation conducted previously with the same GCM for present-day conditions showed a good representation of CO concentrations [*Mickley et al.*, 1999]. For BCt in source regions of the United States, simulated mean concentrations in surface air range from about 0.6–1.1 μg m^{-3} in winter to 0.4–0.7 μg m^{-3} in summer, roughly consistent with observations for BC [*Park et al.*, 2003].

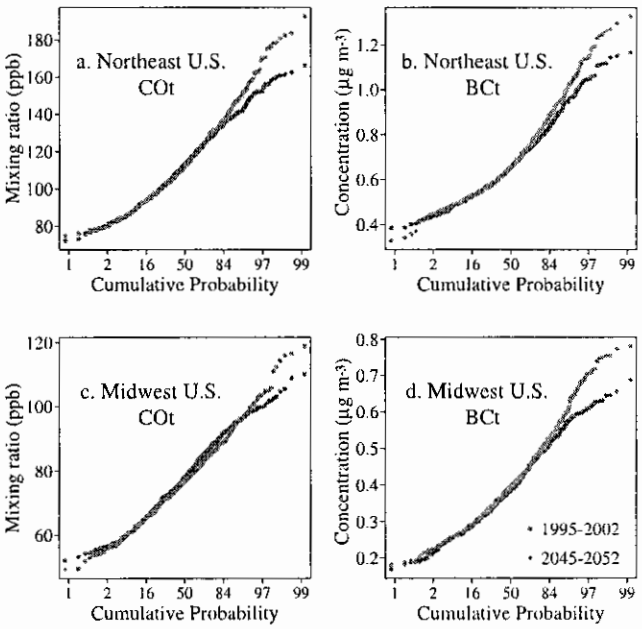


Figure 1. Cumulative frequency distributions of simulated daytime concentrations of combustion carbon monoxide (COt) and black carbon (BCt) averaged over the northeastern and midwestern United States in July and August. Each point represents the spatial average for a particular day. Results are shown for the present-day climate (1995–2002, in green), and the future A1B climate (2045–2052, in red). To isolate the effect of climate change, sources of COt and BCt and the sink of COt are the same for the present-day and future simulations.

[10] We find that seasonal mean surface concentrations of COt and BCt for the years 2045–2052 show in general no significant change relative to present-day. Over the southeastern United States in winter, the increase in precipitation reduces seasonal mean BCt by 5%. A better indicator of the response of air quality to a changing climate is the change in the intensity and duration of high pollution episodes. We examined the cumulative frequency distributions of daily mean surface concentrations of COt and BCt averaged over 6 regions of the United States: (1) the northeast, which includes New England, the mid-Atlantic states, Ohio, West Virginia, Virginia, and eastern Kentucky; (2) the southeast, which extends from eastern Texas to the Atlantic coast; (3) the midwest, which extends from eastern Colorado to Indiana and as far south as Missouri; (4) the southwest; (5) the northwest; and (6) California. The regions range in size from 16 gridboxes (the midwest) to 3 (California).

[11] The largest changes in the frequency distributions for surface COt and BCt concentrations occur over the northeast and midwest in summer, defined here as July–August. In Figure 1, we show the summertime distributions over these two regions for 2045–2052 and 1995–2002. Median and background concentrations do not change significantly. Concentrations at the high end of the distributions, representing pollution episodes, are greater by 5–10% in the future climate. The change is statistically significant ($p < 0.05$) above the 84th percentile for COt and BCt in the

northeast and for BCt in the midwest, representing a collection of 79 days for each 8-year period. The change is also significant above the 97.5th percentile for COt in the midwest (12 days for each 8-year period). Our results indicate an increase in the severity of summertime pollution episodes in these two regions by 2050. Elsewhere in the United States in summer and for most regions during other seasons, we do not detect significant differences in the frequency distributions of concentrations between present-day and 2050 climates.

[12] Surface concentrations in the northeast in the model correlate highly with those of the midwest with a 1–2 day time lag, consistent with observations [*Logan*, 1989; *Moody et al.*, 1998]. The correlation implies that the same synoptic-scale transport mechanisms govern pollution episodes in both regions. Daily mean maximum mixing depths, which average 1.1 km (northeast) and 1.3 km (midwest) in the present-day, increase significantly in the future by 100–240 m ($p < 0.05$), consistent with higher surface temperatures and greater vertical mixing [*Rind et al.*, 2001]. The change in future mixing depths is of the wrong sign to explain the increase in severity of future pollution events.

[13] Time series of BCt and COt surface concentrations over the northeast and midwest in summer show greater autocorrelation in the future than for present-day. We counted the number of consecutive days with regional concentrations above the 84th percentile as representative of pollution episodes. Over the midwest we found an increase of episode duration from 2.3 days to 3.0 days for COt and from 2.4 days to 4.6 days for BCt. In the northeast, COt pollution episodes lengthen from 2 to 2.5 days, but the change for BCt episodes is negligible.

[14] Termination of pollution episodes in the midwest and northeast is driven by cyclones crossing southern Canada and the associated cold fronts, which sweep away pollution [*Cooper et al.*, 2001]. To calculate trends in surface cyclone frequency in the model, we counted the number of times each summer when the mean sea level pressure over Quebec dropped for two consecutive days to below the mean for that summer and then rose on the third day. Using the same method, we also counted the number of surface cold air surges into the midwestern United States from Canada. We found that the average number of cyclones crossing Quebec decreased slightly in the future simulation relative to the present, from 7.5 cyclones per summer to 6.8. The number of cold surges into the midwest decreased 20%, from 6.2 events per summer to 5. The uncertainty in these trends is large; to calculate statistically significant trends would require more years of daily model output. In observations, cold fronts ventilate the northeast every 4–5 days in July–August (Li et al., submitted manuscript, 2004), for a total of about 14 events during those two months. Our method underestimates the number of cyclones and cold surges, which may reflect our definition of these events or the coarse resolution of the model. However, as discussed below, decreasing cyclone frequency in the future climate appears to be a robust result.

4. Discussion

[15] Our results suggest that a warming climate could increase the severity of summertime pollution episodes in the northeastern and midwestern United States. The increase in severity appears to be caused by a decrease in the frequency of surface cyclones tracking across southern Canada. Our model trend in cyclone frequency is consistent with observed long-term trends over North America [*Zishka and Smith*, 1980] and more generally at northern mid-latitudes [*Agee*, 1991; *Key and Chan*, 1999; *McCabe et al.*, 2001]. For example, *Zishka and Smith* [1980] found an 8% decline per decade in the number of July surface cyclones over North America for the period 1950–1977.

[16] Previous GCM studies with increasing greenhouse gases have also calculated a decline in mid-latitude cyclone frequency. Probable causes for this trend include (1) a decrease in the extratropical meridional temperature gradient from the surface through the mid-troposphere, which reduces baroclinicity [*Carnell and Senior*, 1998; *Geng and Sugi*, 2003], and (2) an increase in the magnitude and efficiency of the meridional eddy transport of latent heat, which reduces the number of cyclones required to maintain the meridional temperature gradient [*Zhang and Wang*, 1997]. Consistent with these studies, we find that the meridional temperature gradient in the lower troposphere between 30N and 55N over eastern North America weakens in summer by about 1°C. Over mid-latitudes at 600–800 hPa, the northward, zonally averaged eddy transport of latent heat increases in summer by 5–10%.

[17] We conclude that reduced cyclone frequency in a future warmer climate will lead to an increase in the severity of summertime pollution episodes in the northeastern and midwestern United States. Although the GCM used in our analysis is relatively coarse, the decrease in cyclone frequency and implication for air quality appears to be a robust result. It is well established that cyclones play a critical role in ventilating pollution from these regions. There is also compelling evidence that the frequency of these cyclones has been decreasing over the past decades. This decrease is likely to continue in the future due to increases in greenhouse gases. Quantitative analysis of the implications for future air quality will require regional climate models with detailed chemistry, but the computational demands of such models are formidable. Statistical analysis of observed correlations between pollutant concentrations and meteorological parameters may provide a useful tool to predict pollution trends in GCM simulations. For example, the observed correlation of ozone with temperature in the eastern United States is known to reflect the influences of chemistry, biogenic emissions, and stagnation [*Jacob et al.*, 1993b]. GCM simulations of future temperature change could thus be used to predict future surface ozone changes.

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ABBREVIATIONS

ACS:	American Cancer Society
BVAIT:	B-Vitamin Atherosclerosis Intervention Trial
CCA	common carotid artery
CIMT:	Carotid intima-media thickness
CVD :	Cardiovascular disease
ETS:	Environmental Tabacco Smoke
GIS:	Geographic information system
LA:	Metropolitan Los Angeles area
PM:	Particulate matter
PM2.5 :	particulate matter less than or equal to 2.5 micrometers in aerodynamic diameter
VEAPS:	Vitamin E Atherosclerosis Progression Study

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ABSTRACT

Associations have been found between long-term exposure to ambient air pollution and cardiovascular morbidity and mortality. The contribution of air pollution to atherosclerosis that underlies many cardiovascular diseases has not been investigated. Animal data suggest that ambient particulate matter (PM) may contribute to atherogenesis. We used data on 798 participants from two clinical trails to investigate the association between atherosclerosis and long-term exposure to ambient PM up to 2.5 μm in aerodynamic diameter ($PM_{2.5}$). Baseline data included assessment of the carotid intima-media thickness (CIMT), a measure of sub-clinical atherosclerosis. We geocoded subjects' residential areas to assign annual mean concentrations of ambient $PM_{2.5}$. Exposure values were assigned from a $PM_{2.5}$ surface derived from a geostatistical model. Individually assigned annual mean $PM_{2.5}$ concentrations ranged from 5.2 to 26.9 $\mu g/m^3$ (mean: 20.3). For a cross-sectional exposure contrast of 10 $\mu g/m^3$ $PM_{2.5}$, CIMT increased by 5.9% (95% CI: 1%-11%). Adjustment for age reduced the coefficients, but further adjustment for covariates indicated robust estimates in the range of 3.9% to 4.3% (p-values 0.05 to 0.1). Among older subjects (≥60), women, never smokers, and those reporting lipid-lowering treatment at baseline, the associations of $PM_{2.5}$ and CIMT were larger with the strongest associations in women ≥60 (15.7% ; 5.7% - 26.6%). These results represent the first evidence of an association between atherosclerosis and ambient air pollution. Given the leading role of cardiovascular disease as a cause of death and the large populations exposed to ambient $PM_{2.5}$, these findings may be important and need further confirmation.

INTRODUCTION

A large body of epidemiological evidence suggests associations between ambient air pollution and cardiovascular mortality and morbidity (Peters and Pope 2002) (Pope et al. 2004). All of these studies focus on events occurring at a late stage of vascular disease processes. The impact of air pollution on the underlying preclinical conditions remains poorly understood. We hypothesize that current levels of ambient fine particles up to 2.5 μm in aerodynamic diameter ($PM_{2.5}$) may contribute to atherosclerosis, leading to subclinical anatomical changes that play a major role in cardiovascular morbidity and mortality later in life. Animal studies support our hypothesis by showing that inhalation of ambient particulate matter promotes oxidative lung damage, including alveolar and systemic inflammatory responses (Fujii et al. 2002; Goto et al. 2004; Soukup et al. 1995; Suwa et al. 2002; Tepper et al. 1994; van Eeden et al. 2001).

We investigated the association between residential ambient $PM_{2.5}$ and carotid artery intima-media thickness (CIMT) using pre-randomization baseline data from two recent clinical trials conducted in Los Angeles, California (Hodis et al. 2002). CIMT is a well-established quantitative measure of generalized atherosclerosis that correlates well with all of the major cardiovascular risk factors, with coronary artery atherosclerosis, and with clinical cardiovascular events (Mack et al. 2000). It is an established tool for investigating the contribution of long-term exposures such as smoking or passive smoking to sub-clinical stages of atherosclerosis at any given age (Diez-Roux et al. 1995; Howard et al. 1994; Howard et al. 1998). This is the first study to assess the association of atherosclerosis with air pollution.

METHODS

Population and Health Assessment

We used baseline health data from two randomized, double-blind, placebo-controlled clinical trials conducted at the USC Atherosclerosis Research Unit (Hodis et al. 2002). The

Vitamin E Atherosclerosis Progression Study (VEAPS) investigated the effects of vitamin E on the progression of atherosclerosis measured by carotid artery intima-media thickness (CIMT). The B-Vitamin Atherosclerosis Intervention Trial (BVAIT) focused on the effect of vitamin B supplements on the progression of atherosclerosis (trial in progress). Baseline assessment in both trials included CIMT measured between 1998 and 2003 using the same standardized methods (Hodis et al. 2002; Selzer et al. 1994; Selzer et al. 2001). Recruitment of volunteers occurred over the entire Los Angeles Basin, covering a geographic area of approximately 64,000 km^2.

Eligible subjects for the VEAPS trial (n=353) were men and women ≥40 years old with slightly increased LDL cholesterol (≥3.37 mmol/L), but with no clinical signs or symptoms of cardiovascular disease (CVD) (Hodis et al. 2002). Subjects with diabetes, diastolic blood pressure >100 mmHg, thyroid disease, serum creatinine >0.065 mmol/L, life-threatening diseases, or high alcohol intake were excluded.

The BVAIT trial (N=506) had a similar design to VEAPS. Men and women >40 years of age were prescreened to meet study criteria (fasting plasma homocysteine ≥8.5 μmol/L; postmenopausal for women; no evidence of diabetes, heart disease, stroke, or cancer). Subjects were excluded on the basis of any clinical signs or symptoms of CVD, diabetes or fasting serum glucose ≥ 140 mg/dL, triglyceride levels ≥ 150 mg/dL, serum creatinine > 1.6 mg/dL, high blood pressure, untreated thyroid disease, life threatening disease with prognosis < 5 years, or high alcohol intake.

Thus, our study included 'healthy' subjects with biomarkers (elevated LDL-cholesterol or homocysteine) that suggested an increased risk of future cardiovascular diseases (N= 859). Fifty-eight subjects were excluded in the exposure assignment process as they lived outside the area with $PM_{2.5}$ data. Three subjects had missing data in at least one of the covariates used in the models. Our total sample consisted of 798 participants.

Health measures, including CIMT

Our main outcome of interest is the thickness of the carotid artery intima-media. In both trials, high-resolution B-mode ultrasound images of the right common carotid artery (CCA) were obtained prior to the intervention (base line) with a 7.5-mHz linear array transducer attached to an ATL Ultramark-4 Plus Ultrasound System. We used this baseline CIMT measurement as the outcome. Details of this highly reproducible method are published (Hodis et al. 2002; Selzer et al. 1994; Selzer et al. 2001). Blood pressure, height, and weight were measured with standard procedures.

The baseline questionnaires included an assessment of all major cardiovascular disease risk factors and covariates, including clinical events, diet, use of prescription medications, physical activity, current and past smoking and passive smoking, and vitamin supplements. Age, education, and other socio-demographic factors were available for each subject. Fasting blood samples were also drawn for lipid measurements. Data used in our analyses were collected with the same tools in both trials.

Exposure Assignment

To assess exposure we chose a novel approach derived from a Geographic Information System (GIS) and geostatistics. This method allows for assignment of long-term mean ambient concentrations of $PM_{2.5}$ to the zip code area of each subject's residential address (Künzli and Tager 2000). The resulting surface of $PM_{2.5}$ covered the entire Los Angeles metropolitan area. The surface is derived from a geostatistical model and data from 23 state and local district monitoring stations (year 2000). These monitors are located across the Los Angeles region to characterize urban levels of pollution. To assign exposure, $PM_{2.5}$ data were interpolated using a combination of a universal kriging model with a quadratic drift and a multiquadric radial basis function model (Bailey T and Gatrell 1995; Burrough P and McDonnell 1998). We averaged the

two surfaces based on 25 meter grid cells. Examination of errors from the universal model showed that over 50% of the study area had assigned values within 15% of monitored concentrations, while 67% were within 20%. The larger errors were on the periphery of our study area, where the density of study participants was the lowest. We linked the zip code centroids of each subject with the exposure surface through a geocoding database (www.esri.com). The map (Figure 1) illustrates the $PM_{2.5}$ surface with the geo-located zip codes. Individually assigned $PM_{2.5}$ data had a range from 5.2 to 26.9 $\mu g/m^3$ (mean: 20.3), thus exceeding the range observed across 156 metropolitan areas used in the largest cohort study of air pollution and mortality (Pope et al. 2002b). All models were implemented with ArcScript from the Environmental Systems Research Institute (ESRI, Redlands, CA).

Statistical Analyses

We tested the univariate and multivariate associations between CIMT and ambient $PM_{2.5}$ using linear regression analyses. Extensive residual diagnostics indicated some heteroscedasticity, which was rectified with the natural log-transformed CIMT. We adjusted for factors that were statistically associated with both CIMT and ambient $PM_{2.5}$ (age, male sex, low education, and low income). Next, we expanded the models using covariates that were associated with either $PM_{2.5}$ or CIMT, including indicator variables for current second hand smoke exposure and current and former personal smoking. We then added covariates that play a role in atherosclerosis such as blood pressure, LDL-C, or proxy measures such as reporting treatment with antihypertensives or lipid-lowering medications at study entry. These factors may be on the pathophysiologic pathways linking air pollution exposure and atherosclerosis (Ross 1999); thus, such models may overadjust the coefficients. We chose this conservative approach to test the sensitivity of the effect estimates under a broad range of model assumptions.

There is increasing evidence that host factors such as age, gender, or underlying disease and risk profiles may modify the effects of air pollution (Pope et al. 2002b; Zanobetti and Schwartz 2002). Furthermore, the finding of atherosclerosis in PM-exposed rabbits was based on a hyperlipidemic trait (Suwa et al. 2002). Therefore, we also stratified by gender, age (<60; ≥60 yrs), smoking status, and lipid-lowering drug therapy.

RESULTS

Table 1 summarizes the main characteristics of the study population and among main subgroups. Table 2 presents the percent change in CIMT in association with a 10 $\mu g/m^3$ contrast in ambient $PM_{2.5}$ concentrations for three cross-sectional regression models. The unadjusted model indicates a 5.9% (95% CI: 1%-11%) increase in CIMT per 10 $\mu g/m^3$ $PM_{2.5}$. For the observed contrast between lowest and highest exposure (20 $\mu g/m^3$ $PM_{2.5}$), this corresponds to a 12.1% (2.0%-23.1%) increase in CIMT. The only covariate with a substantial effect on the point estimate was age, which reduced the effect from 5.9% to 4.3% (0.4%-9%) per 10 $\mu g/m^3$ $PM_{2.5}$. This change agrees with the age-related effect modification (see below). Otherwise, effect estimates across the models remained robust, in the range of 3.9% to 4.3% with p-values from 0.05 to 0.1. To corroborate the exposure-response relationship, we also categorized $PM_{2.5}$ levels into quartiles. Figure 2 shows the adjusted mean CIMT across these four groups of equal sample size at the mean levels of the covariates (age, gender, education, and income). The trend across the exposure groups was statistically significant (p=0.041). The unadjusted means of CIMT among these quartiles of exposure were 734, 753, 758, and 774 μm, respectively.

The associations between CIMT and $PM_{2.5}$ were substantially stronger among 109 subjects reporting lipid-lowering medication at study entry, both in men and women (see Table 2 and Figure 3). The crude effect reached 15.8% (2%-31%) per 10 $\mu g/m^3$ $PM_{2.5}$ with adjusted

values ranging between 12% and 16%. Despite the small sample size, p-values of all models were mostly <0.1 and often <0.05.

Results also suggest significant age and gender interactions, with much larger effects in women and in the older age group (Figure 3). Effect estimates in women were statistically significant and typically in the range of 6% to 9% per 10 $\mu g/m^3$ $PM_{2.5}$. Associations were strongest among women ≥60 years of age (N=186), leading to crude estimates of 19.2% (9% - 31%). Adjusted coefficients ranged from 14% to 19%, being statistically significant in all models and sensitivity analyses.

Among never smokers (N=502), the effect estimate reached 6.6% (1.0% to 12.3%). As shown in Figure 3, the estimate was small and not significant in current (N=30) and former smokers (N=265).

DISCUSSION

Our study presents the first evidence for an association between CIMT and long-term exposure to ambient air pollution. As recently reviewed in a statement of the American Heart Association (Brook et al. 2004) substantial epidemiological and experimental evidence suggests a contribution of ambient air pollutants on cardiovascular mortality and morbidity. However, these studies focus on acute and sub-acute effects on cardiac autonomic function, inflammatory or thrombogenic markers, arrhythmia, myocardial infarction, cardiovascular hospital admission, and death. The only outcome considered in long-term air pollution studies has been mortality. The relative risk for acute effects on mortality have been substantially smaller than those observed for long-term associations (Pope et al. 2002a; Samet et al. 2000a). As shown by Künzli et al. cohort studies are capable of capturing acute and chronic effects of air pollution on the course of diseases that ultimately lead to premature death. In contrast, time-series and panel studies investigate only the associations of event occurrence with the most recent exposure (Künzli et al.

2001). Thus, if air pollution has both acute and cumulative long-term effects, one expects larger mortality coefficients in cohort studies. The thickness of the intima-media reflects long-term past exposure; thus, we provide the first evidence for chronic effects of air pollution on atherogenesis which may in part explain the above mentioned discrepancy between acute and long-term risk estimates (Pope et al. 2002b; Samet et al. 2000b).

There are several major aspects to be considered in the interpretation of this new finding, mainly the strength in the exposure assignment, the limited evidence for bias, the differences in effects within subgroups, and plausibility.

Exposure Assignment

The individual residence-based assignment of exposure represents a substantial improvement over most studies that have relied on central monitors or on binary road buffers combined with basic interpolation (Hoek et al. 2002; Pope et al. 2004). As a sensitivity analysis, we used weighted least squares models with the weights specified as the inverse of the standard errors from the universal kriging model to down-weight estimates with larger error. In addition, we implemented models based solely on the universal kriging estimate. In both instances results were robust and similar to what we found with our main model.

Time-activity studies show that people spend most of their time in or around home, and our restriction of exposure assessment on residential address captures the most relevant part of exposure (Leech et al. 2002). $PM_{2.5}$ generally displays spatially homogenous distributions across small areas such as neighborhoods and blocks, and as a result, the ambient conditions at the zip code centroid likely reflect the levels expected at home outdoors (Roosli et al. 2000). $PM_{2.5}$ of outdoor origin will also penetrate indoors, and correlations between long-term outdoor PM concentrations and indoor levels of PM from outdoor origin is high (Sarnat et al. 2000). Exposure to ambient air pollution while working and during commute are not included in our

exposure term but are considered to be a relevant source of exposure (Riediker et al. 2003). Although most likely a random misclassification with biases toward the null, the errors may affect subgroups differently, thus explain part of the observed interactions (see below).

In Los Angeles, no clear trends have been observed in $PM_{2.5}$ concentrations over the past 5 to 10 years. The year 2000 surface characterizes the prevailing mean $PM_{2.5}$ concentrations across several years and can be considered a measure of long-term past exposure. This year also sits in the middle of the baseline recruitment period. Overall, the various limitations in our exposure assignment may add some random error, biasing results toward weaker associations (Thomas et al. 1993).

We also assigned ambient ozone to zip code centroids. Inclusion of ozone in the models had no impact on the $PM_{2.5}$ coefficients or the standard errors. Ozone and $PM_{2.5}$ were not correlated ($r= -0.17$) and the $PM_{2.5}$ estimates were not substantially different in low and high ozone regions. The estimates of association for ozone were positive but not statistically significant and much smaller than for $PM_{2.5}$. This finding must be put in context of the specific challenges in determining long-term exposure to ozone, which are substantially different than in the case of PM exposure. In contrast to $PM_{2.5}$ from outdoor origin, ambient ozone levels have lower correlations with personal exposure (Avol et al. 1998; Sarnat et al. 2000; Sarnat et al. 2002); therefore, the ability to detect effects of ozone will likely be reduced due to greater misclassification.

Biases

Our subjects were a nonrandom sample of 'healthy' volunteers with above average education, meeting strict inclusion criteria for the two clinical trials. Although we cannot exclude some systematic selection biases affecting the cross-sectional data, it is unlikely that subjects with preclinical signs of atherosclerosis would have been more likely to volunteer if they lived in more

polluted areas. Although the selection of subjects limits the generalization to other populations, we do not expect this to lead to over or underestimating the cross-sectional associations. The two trials recruited subjects independently; thus the effects may be compared across trials to evaluate the potential influence of selecting volunteers. The populations differed with regard to age, smoking habits, baseline LDL and treatment, blood pressure, active and passive smoking, and other relevant factors; thus the PM2.5 coefficients were smaller and were not statistically significant in the VEAPS trial with its younger population. However, after taking these factors into account, the associations with ambient $PM_{2.5}$ were similar. For example, among elderly women of VEAPS (N=70) and BVAIT (N=116), the effect estimate was 18.1% (-0.1 to 36.3.%) and 13.6% (2.8 to 24.4.%), respectively. As discussed below, there is some evidence for larger effects in subjects with cardiovascular risk factors, indicated by prescriptions of lipid-lowering treatment. Our trials excluded subjects with clinically manifest cardiovascular diseases. Moreover, if air pollution amplifies systemic inflammation among those prone to atherosclerosis, exclusion of subjects with high LDL may be a source of bias. One may expect effect estimates in a less selected, less healthy population to be larger than those reported.

The wealth of baseline data from these clinical trials offered the opportunity to control for a broad array of covariates. Apart from the effect of age adjustment, estimates were robust to numerous combinations of covariates, including: income, education, active and passive tobacco smoke, cardiovascular prescriptions, vitamin intake and physical activity. Uncontrolled or residual confounding appears to be an unlikely explanation for these results. Among women, adjustment for hormone replacement therapies did not affect the $PM_{2.5}$ estimates.

In previous studies, we found that spatial autocorrelation in the residuals could affect the size and significance of pollution coefficients (Jerrett et al. 2003a). We investigated spatial autocorrelation of the unstandardized residuals. We assessed autocorrelation with a first-order, adjusted first-order, and second-order spatial weight matrices based on nearest neighbor

contiguity, but we found no evidence of spatial autocorrelation. This supports the conclusion that the models supply efficient unbiased estimates (Jerrett et al. 2003b). As part of our sensitivity analyses, we also derived $PM_{2.5}$ surfaces using different interpolations and weighted least squares with weights equal to the inverse of the standard error of the exposure estimate. All approaches produced very similar results.

Evidence for Effect Modification

The data suggest substantial interactions with age, gender, smoking, and underlying cardiovascular risk factors. Given the reduced sample size among subgroups, the recruitment of volunteers, and the cross-sectional nature of the data, it is difficult to fully explore the causes of the observed modifications of associations and to establish susceptibility profiles. If the exposure misclassifications differed across subgroups, part of the interactions may be explained by differential exposure error. The gender and age difference could also be an artifact due to measurement error in the assigned exposure as time spent in commuting and location of work places may be different in men and women and in the young and elderly. Empirical studies on mobility suggest women have smaller activity spaces than men and younger groups, meaning they tend to spend more time in and around the home (Kwan MP and Lee 2003), and the same is probably true of the elderly compared to younger groups. Exposure measurement error may be reduced in those spending more time at home, leading to stronger effects (Thomas et al. 1993). Moreover, differences in statistical power may play a role as well; as shown at least for the age range 25-40 years, power to detect effects on CIMT is larger in women than in men (Stein et al. 2004)

The finding that those reporting prescriptions of lipid-lowering medications at baseline showed stronger associations of CIMT with $PM_{2.5}$ merits further investigation. This result agrees with the observed effects of PM on atherosclerosis in experiments conducted in hyperlipidemic

rabbits (Goto et al. 2004; Suwa et al. 2002). The systemic inflammatory and atherogenic reaction in these rabbits was related to the amount of PM contained in the alveolar macrophages. In our study, being under lipid-lowering therapy is an indicator for risk profiles prone to atherogenesis. Those subjects were mostly men (64%), and, on average, older, more often active or passive smokers, and almost twice as likely to report antihypertensive treatment. The systemic response to ambient PM may amplify and expand the oxidation of LDL-C among these susceptible subjects, consequently contributing to injury in the artery wall (Goto et al. 2004; Ross 1999). Investigations of short-term effects of ambient air pollution on mortality also suggest that underlying risk profiles such as diabetes may amplify susceptibility to ambient PM (Zanobetti and Schwartz 2002), and similar findings have been shown with smoking and diabetes mellitus in association with CIMT (Karim et al. 2004). To clarify the relevance of lipid status, it would be interesting to investigate our hypothesis among cohorts with familial hypercholesteremia (Wiegman et al. 2004; Wittekoek et al. 1999).

As shown in Figure 3, the size of the point estimate was larger among the older subjects. Future research needs to clarify whether air pollution contributes to atherosclerosis only after a certain age or early on. Effects of air pollution on lung development have been observed during adolescence and may be a result of both pulmonary and chronic systemic inflammatory effects (Gauderman et al. 2002); thus, it is conceivable that atherogenic responses may occur early in life. The age-dependence of the effects may also be co-determined by genetic factors (Ross 1999) (Humphries and Morgan 2004).

We also observed larger effects in women. If other cardiovascular risk factors such as occupational exposures dominate atherosclerosis in men, we would expect a smaller effect signal and less precision in the estimates among men. We also hypothesize that interactions may reflect biological causes. If pre-menopausal women are protected against atherosclerosis by endogenous

hormones, loss of hormonal protection would lead to increased vulnerability after menopause (Kannel et al. 1976). This could explain part of the interaction by both age and gender.

Active and passive smoking did not confound results in either the total sample or among subgroups. Adjustment for active tobacco smoke led to a slight increase in the effect estimate, thus residual confounding is unlikely to overestimate the effects. However, $PM_{2.5}$ associations were clearly stronger in never smokers as compared to smokers (data not shown). This gradient was also observed in all subgroups with significant $PM_{2.5}$ associations (Figure 3). Oxidative and inflammatory effects of smoking may dominate to such an extent that the additional exposure to ambient air pollutants may not further enhance effects along the same pathways. The difference in the effects of $PM_{2.5}$ in smokers and nonsmokers needs further investigation. The ACS cohort study does not reveal a clear pattern of a smoking interaction for the association of ambient air pollution and cardiovascular death (Krewski et al. 2004; Pope et al. 2004). In the SAPALDIA study, associations between air pollution and level of pulmonary function did not differ by smoking status (Ackermann-Liebrich et al. 1997).

Some U.S. studies indicate effect modification of air pollution by socioeconomic status with much stronger effects among the less educated (Pope et al. 2002b). The cause of this interaction pattern is not well understood. Socio-economic status was rather homogenous in these mostly well-educated volunteers providing little power to investigate interactions of pollution with socioeconomic status. If lower socioeconomic status (SES) also positively modifies effects of air pollution on atherosclerosis, our population would provide an underestimate of the health effects in the general population (O'Neill et al. 2003). Further research on samples representative of the population will be needed to assess whether the high SES in the clinical trials biases the effects toward the null.

Future research should focus on identifying factors that determine susceptibility to $PM_{2.5}$. We are initiating studies on subjects with inflammatory metabolic syndromes prone to accelerated

atherosclerosis such as postmenopausal women, diabetics, obese or physically inactive people. To corroborate the cross-sectional findings, follow-up studies are ultimately needed to investigate the association of concurrent levels of air pollution exposure with the progression of CIMT.

Plausibility

From a biologic perspective, our results support the hypothesis that long-term exposure to ambient PM contributes to systemic inflammatory pathways, which are a relevant aspect of atherogenesis (Ross 1999). The findings indicate a biologically plausible link between the observed acute effects of ambient air pollution on systemic inflammation (Glantz 2002) and the long-term consequences of sustained vascular inflammation leading to increased atherosclerosis and, ultimately, cardiovascular death (Hoek et al. 2002; Pope et al. 2004). Among susceptible people, this may lead to artery wall lesions similar to those observed in the rabbit model (Fujii et al. 2002; Suwa et al. 2002). In these hyperlipidemic rabbits, four-week PM exposure was associated with the progression of atherosclerotic lesions, coupled with an enhanced release of bone marrow monocytes. These precursors of macrophages play an important role in the atherogenic inflammatory responses (Goto et al. 2004; Ross 1999; Suwa et al. 2002). Given the central role of oxidized LDL in the initiation and progression of atherogenesis, suggestions that the plasma of automotive workers with high exposure to traffic exhaust is more susceptible to oxidation is also of interest (Sharman et al. 2002).

As a quantitative plausibility check we compared the size of the $PM_{2.5}$ effects with effects of other risk factors on CIMT. Using smoking and environmental tobacco smoke (ETS) as a model for air pollution exposure, the size of our estimates appear plausible (Diez-Roux et al. 1995; Howard et al. 1994). Associations of ETS and current levels of air pollution with various respiratory outcomes are similar and support the notion of common underlying pathways (Künzli 2002). Smoking and ETS associate with stiffer and thicker artery walls, reflecting the systemic

effect of these exposures (Howard et al. 1994; Mack et al. 2003). Exposure to ETS was associated with 2% to 3% thicker intima-media, which approximate the effects observed for a 10 $\mu g/m^3$ change in $PM_{2.5}$ (Diez-Roux et al. 1995; Howard et al. 1994). Using never smokers without ETS exposure as the referent group in our data, never smokers with ETS at home had 0.9% (-2.7 to 4.5%) thicker artery walls; former smokers' CIMT was on average 3.4% (0.7-6.3%) increased; and the 30 current smokers had 5% (-1.5 to 11.6%) thicker CIMT. The trend across these four categories of tobacco exposure was statistically significant. As shown in Table 1, smokers were underrepresented in these volunteers of well-educated participants.

The observed percent change in CIMT corresponds to an increase in the thickness of approximately 20-40 μm per 10 $\mu g/m^3$ contrast in $PM_{2.5}$. This difference in CIMT translates into some 3% to 6% increase in the long-term risk for myocardial infarction (O'Leary et al. 1999). Pope et al. reported that long-term exposure to $PM_{2.5}$ was associated with an 18% (14% - 23%) increase in ischemic heart disease (Pope et al. 2004). Effect sizes reported here concur with these findings, indicating that a fraction of the total effect of ambient PM on cardiovascular mortality may be mediated through sustained long-term effects of air pollution on atherosclerosis (Künzli et al. 2001). This is in line with the proposed model (Künzli et al. 2001) that part of the effects observed in cohort studies needs to reflect long-term contributions of air pollution to the underlying disease progression, whereas in other cases, air pollution contributes only to triggering of cardiovascular events or death (Bell et al. 2004; Künzli et al. 2001; Peters and Pope 2002).

From a biological and a policy perspective we emphasize that $PM_{2.5}$ probably serves as a surrogate for the mixture of urban air pollution and constituents of PM. It is premature to conclude that $PM_{2.5}$ and its constituents are the atherogenic culprit *per se*. Atherosclerosis results from complex processes that may include a combination of various urban pollutants, host factors, and pathways that ultimately lead to the findings of a CIMT-$PM_{2.5}$ association.

In conclusion, we have presented the first epidemiological evidence supporting the idea of a chronic vascular response to respiratory and systemic effects of PM exposure. Given the leading role of heart disease as a cause of death in most westernized countries and the growing contribution in developing countries, these findings may be of high public health relevance. Further investigations need to focus on susceptible groups and follow-up of cohorts to investigate the effect of air pollution on the progression of CIMT.

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TABLES

Table 1: Description of assigned exposure (outdoor concentration in 2000), and of carotid intima-media thick characteristics of the study population at the time of baseline measurements in the total sample, men, years, and subjects under lipid-lowering therapy (mean and SD, or %, respectively).

Characteristics		Total sample (798)	Men (443)	Women (355)	Women ≥60 years (
$PM_{2.5}$ ($\mu g/m^3$)		20.3 (2.6)	20.1 (2.7)	20.5 (2.4)	20.7 (2.3)
Ozone (ppb) (annual mean of daily max.)		89.2 (17.9)	89.6 (18.5)	88.8 (17.3)	87.1 (17.2
CIMT (μm)		755 (148)	767 (166)	740 (118)	775 (120)
Age (years)		59.2 (9.8)	58.3 (10.3)	60.4 (8.9)	67.3 (5.3)
Diastolic blood pressure (mmHg)		77.8 (9.2)	79.2 (8.8)	75.9 (9.3)	74.8 (9.5)
Systolic blood pressure (mmHg)		127.2 (16.3)	126.7 (16.0)	127.8 (16.6)	130.5 (16.
LDL cholesterol (mg/dL)		137.9 (29.5)	137.0 (30.9)	139.0 (27.6)	136.4 (26.
Caucasian		67.3 %	67.7 %	66.8 %	65.0 %
Smoking status	Never smokers	62.9 %	62.8 %	63.1 %	62.9 %
	Former smokers	33.2 %	33.4 %	33.0 %	33.3 %
	Current smokers	3.8%	3.6 %	3.9 %	3.8 %
Environmental tobacco smoke at home		33.5 %	21.9 %	47.9 %	55.4 %
Lipid-lowering therapy		13.7 %	15.3 %	11.5 %	15.1 %
Antihypertensive prescriptions		26.2 %	26.6 %	25.6 %	33.3 %

Table 2: Percent change (and 95% CI) in the carotid intima-media thickness (μm) associated with a 10 μg/m
outdoor $PM_{2.5}$ concentration at the residential zip code in the total population (N=798). a)

Model [a]	Total sample (798)		Women ≥ 60 yrs. (186)		Lipi
(with adjustment factors in the model)	% change	p-value	% change	p-value	% cl
None (unadjusted estimate)	5.9 (1.0-10.9)	0.018	19.2 (8.8-30.5)	0.001	15.8
Age, gender, education, income [b]	4.4 (0.0-9.0)	0.056	15.7 (5.7-26.6)	0.002	13.3
All above + active and passive smoking, multivitamins, alcohol	4.2 (-0.2-8.9)	0.064	13.8 (4.0-24.5)	0.002	13.3

a) The table shows the unadjusted association (crude model) and estimates from two multivariate models. Ir
confidence intervals of the estimates. The relative effects are based on a linear model with log-IMT as depe

b) Factors with univariate associations with both, CIMT and $PM_{2.5}$

FIGURE LEGENDS

Figure 1: Zip code locations of the study population geo-coded on the $PM_{2.5}$ surface, modeled with 2000 $PM_{2.5}$ data, and distribution of individually assigned concentrations.

Figure 2: Mean CIMT (± 1 standard error) among quartiles of the $PM_{2.5}$ distribution. The range in each quartile is shown in the x-axes. Mean CIMT levels are provided at the population average of the adjustment covariates (age, gender, education, and income). 1st quartile: reference group.

Figure 3: Percent difference (and 95% CI) in CIMT associated with a 10 $\mu g/m^3$ contrast in ambient $PM_{2.5}$ in all subjects and in subgroups. All estimates are based on the cross-sectional linear model with log-IMT as dependent variable, and home outdoor $PM_{2.5}$ as independent variable, adjusted for sex, age, education and income. Number of subjects per group is shown in parenthesis. Data ordered by size of point estimate. The null effect line is highlighted (dash).

FIGURE 1

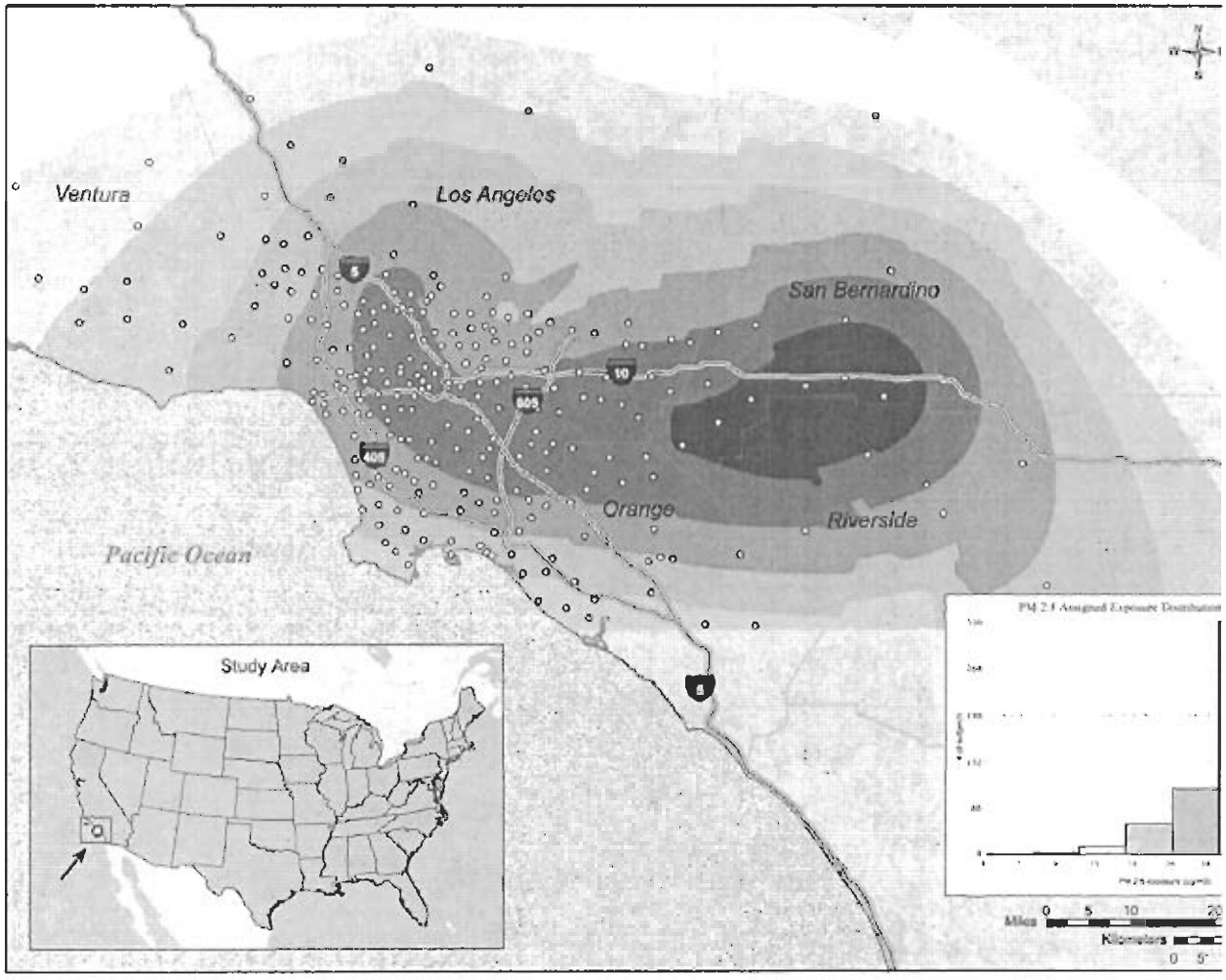

Ventura
Los Angeles
San Bernardino
Orange
Riverside
Pacific Ocean
Study Area
Miles
Kilometers

FIGURE 2

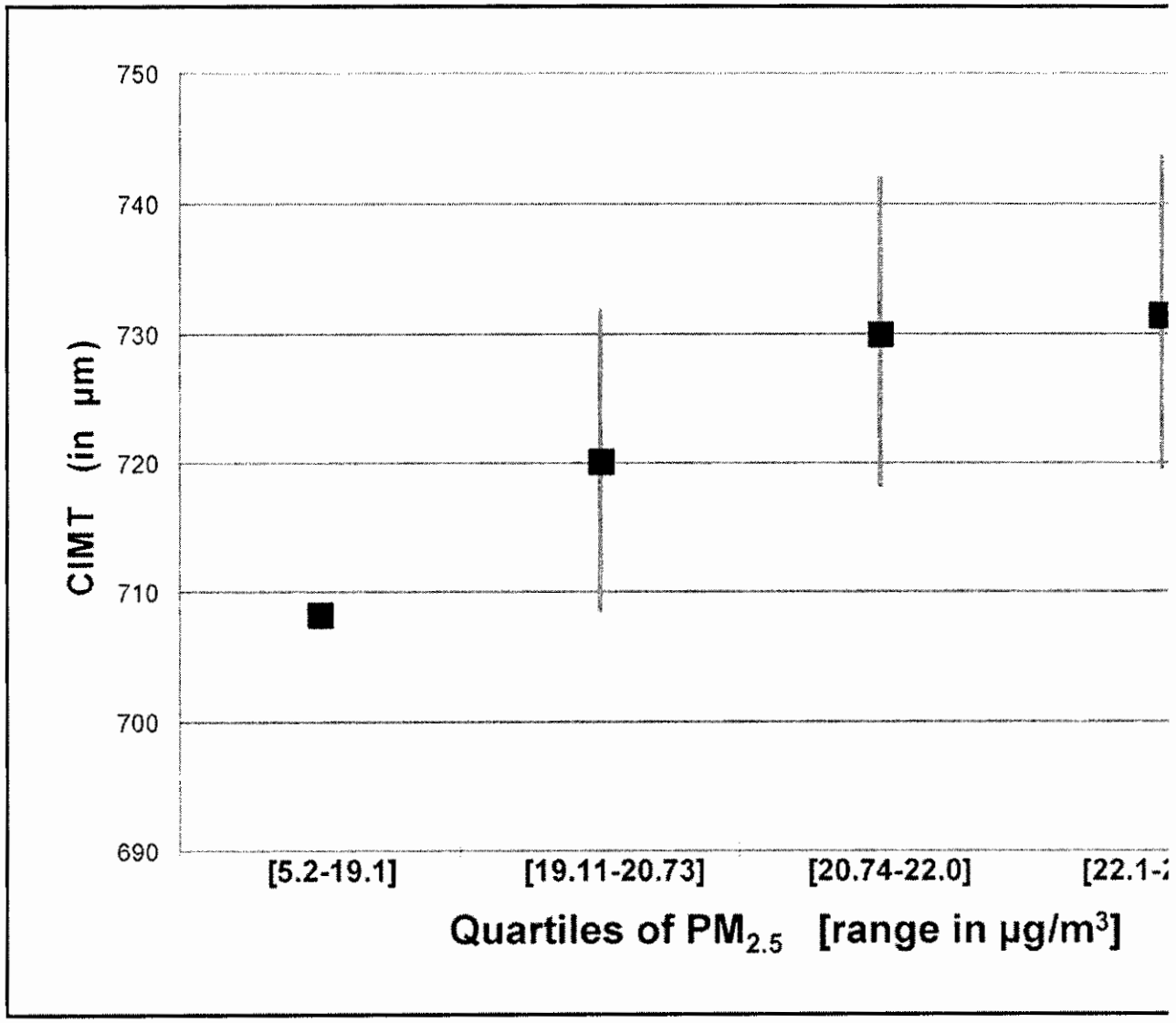
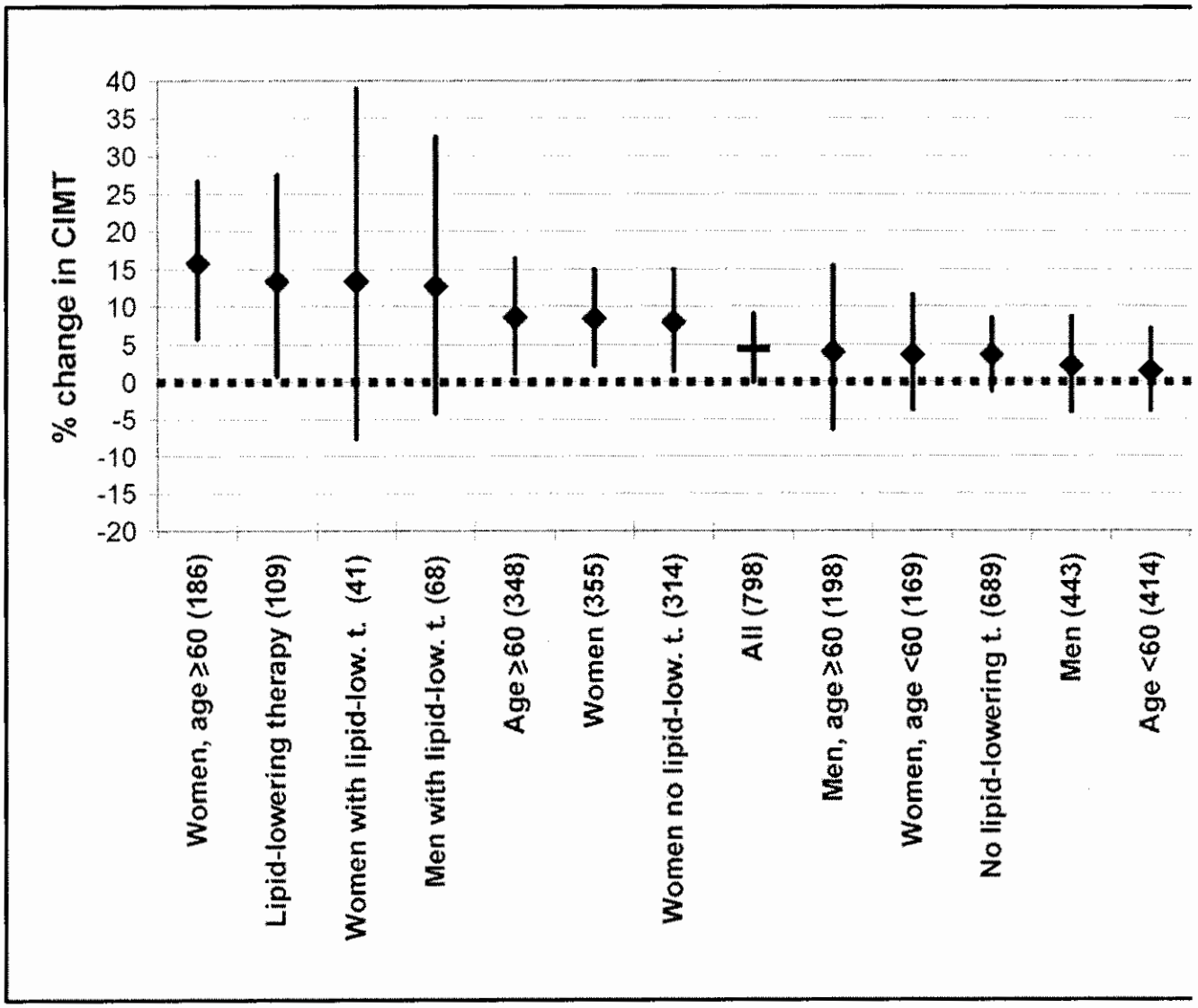

750
740
730
720
710
700
690
CIMT (in µm)
[5.2-19.1]
[19.11-20.73]
[20.74-22.0]
[22.1-
Quartiles of PM2.5 [range in µg/m3]

FIGURE 3


% change in CIMT
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
Women, age ≥60 (186)
Lipid-lowering therapy (109)
Women with lipid-low. t. (41)
Men with lipid-low. t. (68)
Age ≥60 (348)
Women (355)
Women no lipid-low. t. (314)
All (798)
Men, age ≥60 (198)
Women, age <60 (169)
No lipid-lowering t. (689)
Men (443)
Age <60 (414)

Cardiovascular Mortality and Long-Term Exposure to Particulate Air Pollution

Epidemiological Evidence of General Pathophysiological Pathways of Disease

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Background—Epidemiologic studies have linked long-term exposure to fine particulate matter air pollution (PM) to broad cause-of-death mortality. Associations with specific cardiopulmonary diseases might be useful in exploring potential mechanistic pathways linking exposure and mortality.

Methods and Results—General pathophysiological pathways linking long-term PM exposure with mortality and expected patterns of PM mortality with specific causes of death were proposed a priori. Vital status, risk factor, and cause-of-death data, collected by the American Cancer Society as part of the Cancer Prevention II study, were linked with air pollution data from United States metropolitan areas. Cox Proportional Hazard regression models were used to estimate PM-mortality associations with specific causes of death. Long-term PM exposures were most strongly associated with mortality attributable to ischemic heart disease, dysrhythmias, heart failure, and cardiac arrest. For these cardiovascular causes of death, a 10-$\mu g/m^3$ elevation in fine PM was associated with 8% to 18% increases in mortality risk, with comparable or larger risks being observed for smokers relative to nonsmokers. Mortality attributable to respiratory disease had relatively weak associations.

Conclusions—Fine particulate air pollution is a risk factor for cause-specific cardiovascular disease mortality via mechanisms that likely include pulmonary and systemic inflammation, accelerated atherosclerosis, and altered cardiac autonomic function. Although smoking is a much larger risk factor for cardiovascular disease mortality, exposure to fine PM imposes additional effects that seem to be at least additive to if not synergistic with smoking. **(*Circulation*. 2004; 109:71-77.)**

Key Words: mortality ■ pulmonary heart disease ■ cardiovascular diseases ■ smoking

Substantial epidemiological evidence suggests that fine particulate matter air pollution (PM) has adverse human health effects.[1] Although many studies have focused on respiratory health end points, there is growing evidence that PM is a risk factor for cardiovascular disease.[2] This evidence comes from studies that have observed increases in cardiovascular disease deaths during and immediately after pollution episodes, associations between daily changes in PM and cardiovascular deaths and hospitalizations, and increased risk of adult cardiopulmonary disease mortality associated with spatial differences in ambient PM concentrations.[3,4] Although epidemiologic observations provide compelling evidence of a link between PM and cardiopulmonary morbidity and mortality, our understanding of the underlying biological mechanisms remains limited.[5]

See p 5

Previous analyses of mortality effects of long-term PM exposure[3,4] used broad cause-of-death classifications because of concerns about the use of death certificates to identify causes of death and because of potential cross-coding between pulmonary and cardiovascular deaths. These analyses linked PM exposure with cardiopulmonary mortality but provided no information about associations with specific diseases that might be helpful in understanding general pathophysiological pathways. In the present study, we use data from the largest presently available prospective cohort study of mortality collected by the American Cancer Society (ACS) linked with air pollution data for metropolitan areas throughout the United States. Statistical analysis focuses on evaluating patterns of associations with specific causes of

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TABLE 1. Expected Patterns of PM Mortality Associations for Specific Causes of Cardiopulmonary Deaths Based on 3 Hypothesized General Pathophysiological Pathways

Cause of Death	Accelerated Progression of COPD	Inflammation/Accelerated Atherosclerosis	Altered Cardiac Autonomic Function
All cardiovascular diseases plus diabetes	...	↑	↑
Ischemic heart disease	...	↑ ↑ ↑	↑
Dysrhythmias, heart failure, cardiac arrest	...	↑ ↑	↑ ↑
Hypertensive disease	...	↑	↑
Other atherosclerosis, aortic aneurysms	...	↑ ↑	...
Cerebrovascular disease	...	↑ ↑	...
Diabetes	...	↑ ↑	...
All other cardiovascular diseases	...	↑	...
Diseases of the respiratory system	↑ ↑	...	...
COPD and allied conditions	↑ ↑ ↑	...	...
Pneumonia and influenza	...	...	...
All other respiratory disease	...	...	...

death that may provide guidance toward understanding general pathophysiological pathways linking PM with mortality.

Epidemiologic studies are not inherently designed to study biological mechanisms, yet they can be used to evaluate consistency between epidemiologic health end points and what is known about potential mechanistic pathways of disease. The plan of this study is to establish a priori expected patterns of PM mortality with specific causes of death based on hypothesized general pathophysiological pathways linking long-term PM exposure with cardiopulmonary mortality. The ACS cohort is used to empirically estimate these PM mortality associations with specific causes of death and evaluate the observed patterns of PM mortality in relationship to the a priori patterns. Because the database includes information on smoking history, we additionally evaluate mechanistic hypotheses of the relationship of smoking and air pollution effects.

Methods

Hypothesized Pathophysiological Pathways

Before statistical fitting, expected patterns of PM mortality associations for specific causes of cardiopulmonary deaths were determined based on 3 hypothesized general pathophysiological pathways. These a priori patterns are explicitly provided in Table 1, and expected associations with PM are indicated by arrows. The first hypothesized pathway suggests that PM exposure results in accelerated progression of chronic obstructive pulmonary disease (COPD).[6] For this pathway, positive associations with respiratory disease deaths generally, but deaths from COPD and allied conditions more specifically, were expected. The second hypothesized pathway involves pulmonary and systemic inflammation and accelerated atherosclerosis. Inhaling PM may provoke a low-grade pulmonary inflammatory response, release of potentially harmful cytokines, changes in blood coagulability, and triggering of other related physiological responses, including increased risk of acute cardiovascular events and the potential for accelerated development of atherosclerosis and cardiovascular disease.[7,8] For the inflammation/accelerated atherosclerosis hypothesis, we expected PM associations with diseases of the cardiovascular system plus diabetes, which are associated with atherosclerosis or its complications but most specifically with ischemic heart disease. The third hypothesized pathway involves altered cardiac autonomic function. Studies have observed that changes in cardiac autonomic function as measured by heart rate variability (HRV) are independent predictors of cardiovascular disease and mortality.[9] Recent epidemiological studies have observed associations between autonomic nervous system–related physiological measures and air pollution.[10–12] For this hypothesis, we expected the strongest associations to be with cardiac dysrhythmias and cardiac arrest.

Study Population

The empirical analysis is based on data collected by the ACS as part of the Cancer Prevention Study II (CPS-II), an ongoing prospective mortality study of ≈1.2 million adults.[4] Participants resided in all 50 states, the District of Columbia, and Puerto Rico and were enrolled by ACS volunteers in the fall of 1982. Enrollment was restricted to persons aged 30 years or older who were members of households with at least 1 individual aged 45 years or older. Participants completed a confidential questionnaire, which included questions about age, sex, weight, height, smoking history, alcohol use, occupational exposures, diet, education, marital status, and other characteristics.

Vital status of study participants was ascertained by ACS volunteers in September of 1984, 1986, and 1988. Reported deaths were verified with death certificates. Subsequently, through December 31, 1998, vital status was ascertained through linkage of the CPS-II study population with the National Death Index.[13] Ascertainment of deaths was >98% complete for the period of 1982 to 1988 and ≈93% complete after 1988. Death certificates or codes for cause of death were obtained for >98% of known deaths. Our analysis was restricted to those participates who resided in United States metropolitan areas with available pollution data. The actual size of the analytic cohort ranged from ≈319 000 to 500 000, depending on the specific pollution index (Table 2).

Pollution Exposure Estimates

Each participant was assigned a metropolitan area of residence based on his or her 3-digit ZIP code at time of enrollment. The specific

TABLE 2. Summary of Indexes of Fine Particulate Pollution Measures and Size of Analytic Cohorts

Fine Particulate Index	Mean (SD), $\mu g/m^3$	No. of Metropolitan Areas	No. of Participants in Thousands
$PM_{2.5}$ (1979–1983)	21.1 (4.6)	61	359
$PM_{2.5}$ (1999–2000)	14.0 (3.0)	116	500
$PM_{2.5}$ (average)	17.1 (3.7)	51	319

TABLE 3. Specific Cause-of-Death Categories, ACS-CPS-II and ICD-9 codes, and Percent of Total Deaths for each Cause of Death

Cause-of-Death Groupings	ACS-CPS Codes	ICD-9 Codes	% of Deaths	Comments*
All cardiovascular diseases plus diabetes	01–10, 12, 0A, 0B	390–459, 250	45.1	...
Ischemic heart disease (acute myocardial infarction, coronary atherosclerosis, other chronic ischemic heart disease)	1	410–414	23.7	47% acute MI, 27% coronary atherosclerosis, 21% unspecified chronic ischemia
Dysrhythmias, heart failure, cardiac arrest (plus cardiomyopathy, unspecified with arteriosclerosis, and related)	5	420–429	8.2	33% unspecified, 20% heart failure, 14% cardiomyopathy, 13% cardiac arrest
Hypertensive disease	3	401–405	1.4	63% unspecified
Other atherosclerosis and aortic aneurysms	07, 08, 0B	440–441	1.7	36% generalized and unspecified atherosclerosis, 62% aortic aneurysms
Cerebrovascular disease	6	430–438	6.8	55% acute but ill-defined
Diabetes	12	250	1.9	...
All other cardiovascular diseases	02, 04, 09, 10, 0A	390–459, excluding those specified	1.4	30% pulmonary embolism and infarction, 20% rheumatic fever, 13% unspecified peripheral vascular disease
Diseases of the respiratory system	13–18	460–519	8.2	...
COPD and allied conditions	14–17	490–496	4.1	71% chronic airway obstruction not elsewhere classified, 20% emphysema
Pneumonia and influenza	13	480–487	2.8	87% pneumonia, organism unspecified
All other respiratory diseases	18	460–519, excluding those specified	1.3	...

*Based on 7 to 16 years of follow-up with available unconsolidated 4-digit ICD-9 coding.

measure of PM pollution used in this analysis was $PM_{2.5}$ (particles measuring <2.5 μm in diameter). Three constructed indexes for $PM_{2.5}$ were used in the analysis (Table 2). The first, $PM_{2.5}$ (1979 to 1983), was compiled by the Heath Effects Institute reanalysis team[14] using data from the Inhalable Particle Monitoring Network for 1979 to 1983. Widespread sampling of $PM_{2.5}$ was not available in the United States after 1983 and until after 1997, when the Environmental Protection Agency adopted ambient air quality standards for $PM_{2.5}$. As a consequence of the $PM_{2.5}$ standard, numerous sites began collecting $PM_{2.5}$ data in 1999. The second index, $PM_{2.5}$ (1999 to 2000), used $PM_{2.5}$ data that were extracted from the Environmental Protection Agency Aerometric Information Retrieval System database for 1999 and the first 3 quarters of 2000. For each site, quarterly averages for each of the 2 years were computed. The 4 quarters were averaged when at least 1 of the 2 corresponding quarters for each year had at least 50% of the sixth-day samples and at least 45 total sampling days available. Measurements were averaged first by site and then by metropolitan area. The integrated average of $PM_{2.5}$ concentrations was estimated by averaging concentrations for the early and later periods, providing the third index, $PM_{2.5}$ (average).

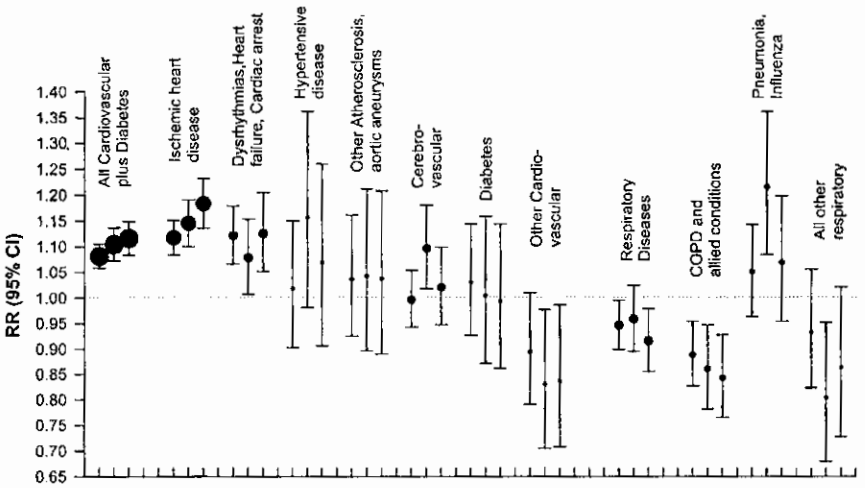
Cause-of-Death Coding and Categorization

Throughout the 16-year follow-up, 22.5% of the cohort participants died. For the first 6 years of follow-up, cause of death was coded using a 2-digit ACS-CPS code that was a consolidation of International Classification of Diseases, Ninth Revision (ICD-9) codes. For the remainder of the follow-up, ICD-9 codes were used. Specific cause-of-death categories with their corresponding ACS-CPS and ICD-9 codes are presented in Table 3. Based on unconsolidated ICD-9 codes available during the last 7 to 16 years of follow-up, it was clear that the specificity of information provided on the death certificates as interpreted by the nosologist was limited. Most deaths were coded for a relatively small number of specific causes of deaths, and a large percentage of the deaths were coded for relatively unspecific causes. An independent audit using a sample of 240 death certificates and an independent nosologist found 93.7% agreement in cause-of-death coding.[14]

Statistical Analysis

Adjusted mortality relative risk ratios were estimated using the Cox proportional hazards regression model.[15] This approach has been used in previous studies of pollution-related mortality,[3,4] including analyses that extended the model by incorporating spatial random effects and nonparametric spatial smooth components.[4,14] Because pollution-related risk estimates were largely unaffected by these extended models, this analysis used the standard Cox proportional hazard model.

The models controlled for available individual co-risk factors, as reported elsewhere.[4] To control for age, sex, and race, the models were stratified by 1-year age categories, sex, and race (white versus other), allowing each category to have its own baseline hazard. In addition, individual level covariates were included in the models to adjust for smoking, education, marital status, body mass index (BMI), alcohol consumption, occupational exposures, and diet. Both indicator and continuous variables were used to control for tobacco smoking. Smoking indicator variables included current cigarette smoker, former cigarette smoker, and pipe or cigar smoker only, along with indicator variables for starting smoking before or after age 18 years. Continuous smoking variables included linear and squared terms for current smoker's years of smoking, current smoker's cigarettes per day, former smoker's years of smoking, and former smoker's cigarettes per day, plus number of hours per day exposed to passive cigarette smoke. Variables indicating completion of high school or education beyond high school and marital status were included. BMI and BMI squared were included as continuous variables. Indicator variables for beer, liquor, and wine drinkers and nonresponders versus nondrinkers were included to adjust for alcohol consumption. Variables indicating occupational exposure included exposure to asbestos, chemicals/acids/solvent, coal or stone dusts, coal tar/pitch/asphalt, diesel engine exhaust, or formaldehyde and additional indicator vari-



Adjusted relative risk ratios and 95% CIs for cardiovascular and respiratory mortality associated with a 10-$\mu g/m^3$ change in $PM_{2.5}$ for 1979 to 1983, 1999 to 2000, and average, respectively. Size of the dots corresponds to the relative number of deaths.

ables that indicated 9 rankings of an occupational dirtiness index described elsewhere.[14] Two diet indices that accounted for fat consumption and consumption of vegetables, citrus, and high-fiber grains were derived based on information given in the enrollment questionnaire.[16] Quintile indicator variables for each of these diet indices were also included in the models.

Models were estimated for each cause-of-death category listed in Table 3 using each of the PM indexes listed in Table 2. Models were also estimated in stratified analysis of smokers, former smokers, and never smokers. Pollution mortality effects were estimated while controlling for all of the smoking variables. However, to obtain simple risk estimates for cigarette smoking that are easily comparable to the risk estimates for pollution, models were also estimated, including only indicator variables for former smoker and current smoker.

Results

More than half of all deaths were attributable to cardiopulmonary disease generally—≈45% cardiovascular disease and 8% respiratory disease (Table 3). The largest specific cause of death was ischemic heart disease, accounting for almost one quarter of all deaths. Even with limited specificity regarding cause-of-death categories, substantial differences in response to PM were observed. The Figure illustrates adjusted relative risk ratios (RRs) and 95% confidence intervals (CIs) for the various cause-of-death categories associated with a 10 $\mu g/m^3$ difference in $PM_{2.5}$. Similar RRs were estimated for each of the 3 indexes of PM. The relative sizes of the dots are proportional to the relative number of deaths for each cause. Numerical RRs and CIs (for only $PM_{2.5}$ average) are provided in Table 4. Table 5 presents the numerical RRs and CIs for $PM_{2.5}$ stratified by smoking status.

Statistically robust associations between $PM_{2.5}$ and overall cardiovascular disease mortality were observed. Predominant PM mortality associations were with ischemic heart disease, but statistically significant associations were also observed with the combined category of dysrhythmias, heart failure, and cardiac arrest. Statistically significant, positive associations were not consistently observed for other cardiovascular causes of death or for respiratory disease deaths. In fact, COPD and related deaths were negatively associated with fine particulate air pollution exposure.

As also presented in Table 4, cigarette smoking was associated with far larger excess risks for both cardiovascular and respiratory disease mortality than air pollution. However, regardless of smoking status, statistically robust associations between $PM_{2.5}$ and overall cardiovascular disease mortality were observed with the predominant PM mortality associa-

TABLE 4. Adjusted RRs and 95% CIs for a 10 $\mu g/m^3$ Increase in $PM_{2.5}$ (Average) and for Former and Current Smoker (vs Never Smoker) for Various Cause-of-Death Categories

Cause of Death	$PM_{2.5}$	Former Smoker	Current Smoker
All cardiovascular diseases plus diabetes	1.12 (1.08–1.15)	1.26 (1.23–1.28)	1.94 (1.90–1.99)
Ischemic heart disease	1.18 (1.14–1.23)	1.33 (1.29–1.37)	2.03 (1.96–2.10)
Dysrhythmias, heart failure, cardiac arrest	1.13 (1.05–1.21)	1.18 (1.12–1.24)	1.72 (1.62–1.83)
Hypertensive disease	1.07 (0.90–1.26)	1.21 (1.07–1.37)	2.13 (1.86–2.44)
Other atherosclerosis and aortic aneurysms	1.04 (0.89–1.21)	1.63 (1.45–1.84)	4.21 (3.71–4.78)
Cerebrovascular disease	1.02 (0.95–1.10)	1.12 (1.06–1.18)	1.78 (1.67–1.89)
Diabetes	0.99 (0.86–1.14)	1.05 (0.94–1.16)	1.35 (1.20–1.53)
All other cardiovascular diseases	0.84 (0.71–0.99)	1.22 (1.09–1.38)	1.78 (1.56–2.04)
Diseases of the respiratory system	0.92 (0.86–0.98)	2.16 (2.04–2.28)	3.88 (3.66–4.11)
COPD and allied conditions	0.84 (0.77–0.93)	4.93 (4.48–5.42)	9.85 (8.95–10.84)
Pneumonia and influenza	1.07 (0.95–1.20)	1.23 (1.13–1.34)	1.89 (1.70–2.09)
All other respiratory diseases	0.86 (0.73–1.02)	1.54 (1.36–1.74)	1.83 (1.57–2.12)

TABLE 5. Adjusted RRs and 95% CIs Stratified by Smoking Status for a 10 $\mu g/m^3$ Increase in $PM_{2.5}$ (Average)

Cause of Death	Never Smokers	Former Smokers	Current Smokers
All cardiovascular diseases plus diabetes	1.11 (1.07–1.16)	1.09 (1.04–1.15)	1.16 (1.09–1.23)
Ischemic heart disease	1.22 (1.14–1.29)	1.15 (1.07–1.23)	1.16 (1.07–1.27)
Dysrhythmias, heart failure, cardiac arrest	1.04 (0.95–1.15)	1.14 (1.00–1.29)	1.31 (1.12–1.52)
Hypertensive disease	0.88 (0.69–1.12)	1.05 (0.76–1.44)	1.57 (1.12–2.19)
Other atherosclerosis and aortic aneurysms	1.18 (0.90–1.55)	0.91 (0.70–1.19)	1.08 (0.84–1.40)
Cerebrovascular disease	1.03 (0.93–1.15)	1.01 (0.88–1.17)	1.01 (0.86–1.20)
Diabetes	1.01 (0.83–1.23)	0.86 (0.66–1.12)	1.26 (0.91–1.74)
All other cardiovascular diseases	0.86 (0.67–1.09)	0.83 (0.61–1.13)	0.83 (0.59–1.15)
Diseases of the respiratory systems	1.03 (0.91–1.17)	0.89 (0.80–1.00)	0.85 (0.76–0.96)
COPD and allied conditions	0.96 (0.73–1.24)	0.86 (0.73–1.00)	0.81 (0.70–0.93)
Pneumonia and influenza	1.20 (1.02–1.41)	0.98 (0.80–1.20)	0.90 (0.69–1.18)
All other respiratory diseases	0.74 (0.56–0.97)	0.88 (0.68–1.16)	1.10 (0.76–1.60)

tions with ischemic heart disease (Table 5). One notable difference across smoking status was that, for never smokers, the PM mortality association with pneumonia and influenza was positive, statistically significant, and had RRs similar to those for ischemic heart disease.

Discussion

These results provide intriguing, but inconclusive, insights into general pathophysiological pathways that may link exposure to fine particulate air pollution and cardiovascular disease mortality. Although previous studies have observed that elevated exposures to PM are associated with measures of lung function[17] and prevalence of symptoms of obstructive airway disease,[18] the pattern of PM mortality associations in this analysis does not fit the a priori pattern presented for the accelerated progression of COPD hypotheses. Unfortunately, the reliance on cause-of-death coding from death certificates presents important limitations and the potential for estimation bias for specific causes of death. For example, COPD patients are predisposed to die of pneumonia. Inhalation of fine inert PM can cause bronchospasm even in healthy subjects[19] and could additionally reduce ventilatory reserve in patients with COPD, making death from pneumonia even more likely. COPD patients are also more likely to die from cardiovascular disease.[20] If PM exposure accelerates progression of COPD, but those most susceptible to PM are prematurely removed by pneumonia or cardiovascular disease death, the estimated PM effect on remaining COPD deaths may be misleading. Furthermore, the influence of medication use, especially antiinflammatory agents by COPD patients, on the physiological response to PM is unknown.

Given the robust PM association with ischemic heart disease, the empirical pattern of PM mortality associations is more consistent with the inflammation/accelerated atherosclerosis hypothesis. The proposition that PM-induced low-grade inflammation may increase the risk of adverse coronary events is supported by observations that PM exposure is associated with (1) elevated levels of C-reactive protein,[21] a marker of systemic inflammation that may be an important and independent predictor of cardiovascular disease[22]; (2) inflammatory lung injury[23,24]; (3) bone marrow and blood cell responses[25]; (4) enhanced human alveolar macrophage production of proinflammatory cytokines[26]; (5) elevated blood plasma viscosity[27]; (6) endothelial dysfunction and brachial artery vasoconstriction[28]; and (7) triggering of myocardial infarction.[29] PM-induced inflammatory responses have also been observed in studies using animal models.[30] In a study of rabbits susceptible to atherosclerosis, repeated PM exposure induced progression of atherosclerotic lesions.[8] Low-level PM exposure from secondhand tobacco smoke has also been shown to promote inflammatory response and atherosclerosis, even at exposure to secondhand smoke of just 1 cigarette per day,[31] raising the possibility that PM and cigarette smoke may invoke similar pathophysiological mechanisms.

The association between PM and death attributable to dysrhythmias, heart failure, and cardiac arrest also supports the altered cardiac autonomic function hypotheses. Previous studies have observed that elevated PM exposure is associated with changes in autonomic function, as indicated by changes in HRV.[10–12] The proposition that exposure to PM is associated with changes in cardiac autonomic function is additionally bolstered by (1) observed changes in HRV after occupational PM exposure[32]; (2) HRV declines after just 2 hours of elevated PM from secondhand cigarette smoke in an airport smoking lounge[33]; (3) increases in systolic blood pressure during elevated exposure to PM and other pollutants[34]; and (4) animal studies that observed PM exposure-related changes in cardiac rhythm or function.[35] In addition, cardiac patients with implanted cardioverter defibrillators had higher rates of discharges, indicating potentially life-threatening arrhythmias, associated with air pollution.[36]

The likelihood of multiple mechanistic pathways with complex interdependencies must be considered when interpreting these results. For example, the role of the vasculature in response to PM has also received increased attention. Recent findings include (1) increased vasoconstriction in the pulmonary vessels of PM-exposed rats[37]; (2) enhanced acute

vasoconstriction in healthy adults as measured by brachial artery diameter with concomitant inhalation of PM and ozone[28]; (3) marked endothelial cell activation by ultrastructural criteria in small coronary vessels in stray dogs from Mexico City compared with those from 3 less polluted cities[38]; (4) increased circulating levels of the vasoactive peptide endothelin in rats exposed to urban particles,[39] indicating that vasoconstriction may be mediated by humoral factors; and (5) enhanced cardiac ischemia in PM-exposed dogs.[40] Taken together, these findings support the notion that particulate pollution may be associated with changes resulting from vasoconstriction.

If there are systemic toxic endothelial responses to ambient particles, this should be reflected with cardiac and systemic vascular responses. The fit for inflammation/accelerated atherosclerosis was expected to be best for ischemic heart disease, and it was. However, it was only marginally better for ischemic heart disease compared with the dysrhythmias group or the category of all cardiovascular diseases plus diabetes. The a priori predictions in relationship to all other cardiovascular groups were not correct. Because these other diagnosis groups were not strongly associated with ambient particle mortality, it is less likely that systemic toxic endothelial responses are the basis for the underlying mechanism, but it does not rule out a cardiac-specific endothelial response.

The autonomic nervous system also influences determinants of ischemic heart disease. Changes in sympathetic and parasympathetic nervous system activity have effects on vascular tone. For example, whereas increased parasympathetic activity normally leads to coronary vasodilation, in the presence of coronary artery disease, parasympathetic stimulation may lead to net coronary constriction.[41] PM effects on autonomic nervous system function have been documented in the elderly[10–12] and in animals experimentally.[35] The distinction between ischemia arising from atherosclerotic/inflammatory mechanisms and ischemia attributable to coronary vasoconstriction driven by particulate-induced changes in autonomic function in the presence of endothelial damage, therefore, cannot be distinguished easily.

In acute studies, the time course of response provides information on the biologic mechanism. Increased risk of myocardial infarction,[29] reduced HRV,[33] and vasoconstriction all within 2 hours of exposure[28] support the importance of acutely reacting mechanisms, as might be associated with the sympathetic nervous system. In animals, enhanced ST-segment elevation on the day of a 6-hour concentrated PM exposure[40] is indicative of a short latency response (such as neural/sympathetic). Inflammatory mechanisms that take 24 hours or longer to develop are also supported.[29,40] In both human and experimental animal studies, there is evidence for both acute and protracted mechanisms in response to ambient particles, so that defining dominance between the inflammation/accelerated atherosclerosis and the altered cardiac autonomic function mechanisms may be difficult in the chronic exposure study reported here.

Smoking was associated with substantially greater elevated risks for all of the causes of death (Table 4). Nevertheless, cardiovascular disease, especially ischemic heart disease, fatal dysrhythmias, heart failure, and cardiac arrest, was associated with $PM_{2.5}$ even after controlling for smoking. Significant positive associations between $PM_{2.5}$ and pneumonia/influenza deaths were only observed for never smokers. The interpretations of the effect of $PM_{2.5}$ using stratification by smoking status are intriguing and may be assessed in relationship to specific mechanisms of response. For example, similar RRs of the pollution effect for all cardiovascular diseases plus diabetes and ischemic heart disease were estimated for current smokers and for never smokers (Table 5). For the dysrhythmias, heart failure, and cardiac arrest group and hypertensive disease, there were larger RRs from air pollution for smokers compared with never smokers. The substantial excess risk associated with smoking and similar or even larger RRs from air pollution for smokers compared with never smokers implies that the absolute risks of air pollution are larger for smokers than for nonsmokers. Mechanisms by which cigarette smoke and air particulate exposure operate for these cardiovascular causes of death may be complementary and seem to be at least additive if not synergistic.

Cigarette smoking was a large and important risk factor for respiratory disease mortality. Air pollution was not. Only pneumonia and influenza deaths in never smokers were associated with PM. In contrast, numerous daily time-series mortality studies[1] have observed that daily mortality counts for both cardiovascular and respiratory disease are associated with day-to-day changes in PM. These results suggest that smoking contributes to the progression of both cardiovascular and respiratory disease. Whereas long-term exposure to PM pollution may contribute to the long-term progression of cardiovascular disease, for respiratory disease, air pollution's primary role is the exacerbation of existing disease.

In conclusion, this analysis provides evidence that long-term exposure to fine particulate air pollution is an important risk factor for cause-specific cardiovascular disease mortality. Although it is challenging to make empirical observations relating to potential mechanistic pathways of disease from epidemiologic studies, the results of this analysis are largely consistent with the proposition that the general pathophysiological pathways that link long-term PM exposure and cardiopulmonary mortality risk include pulmonary and systemic inflammation, accelerated atherosclerosis, and altered cardiac autonomic function.

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February 24, 2005

Re: Cape Wind Environmental Review

To the Army Corps of Engineers

I submit the following statement and accompanying documents to the Army Corps of Engineers for your consideration for inclusion as additional documentation of the extremely important environmental and health benefits which will result from its approval and ultimate completion. The DEIS for Cape Wind does not, in my opinion, adequately recognize the full danger to Massachusetts and the global biosphere resulting from fossil fuel generated carbon dioxide emissions contributing to accelerated global warming, and by accompanying particulates and gases including NOx, Sox and VOCs. Several recent studies are referenced and enclosed.

The first predicts likely worsening of ground level ozone in the Northeast with expected climate warming,

Cape Wind turbines and wind farm will not contribute significantly to global warming due to fossil fuel use. Thus it would have this additional predicted benefit of not contributing to global warming nor increased stagnant pollution air episodes during summers. Its approval will help facilitate future renewable wind energy projects. Defeat of Cape Wind will subject the region to further use of fossil fuel generation and concomitant climate warming and increased regional air pollution with associated morbidity and mortality increases due to direct and indirect toxic effects of fossil fuel emissions among humans, flora and fauna. Viz:

Effects of Future Climate Change on Regional Air Pollution Episodes in the United States, Mickley et al., Geophysical Research Letters, 2004. See Boston Sunday Globe article below.

The second are two articles new scientific report estimates the toll in cardiovascular morbidity and mortality associated with particulate air pollution and finds the effects significant in loss of human life and disease causation. One must assume, until proven otherwise, that other mammals if not all mammals in Massachusetts and New England would also benefit from cleaner air through this same mechanism. Cape Wind turbines and wind farm will not contribute significantly to this local or regional air pollution or their resulting harms.

Ambient air pollution and atherosclerosis in Los Angeles, Kunzli et al, Environmental Health Perspectives, November 2004 and

Cardiovascular Mortality and Long Term Exposure to Particulate Air Pollution, Pope et al., Circulation, January, 2004.

The third article is associated with new research which has greatly heightened the concern of international climate scientists. A massive research project using donated volunteer computing power from a large array of home and desktop computers has generated a new estimate of the forcing sensitivity of the global climate in response to a doubling of carbon dioxide. The results from the ClimatePrediction.Net research, published in Nature January 5, 2005 finds that the climate system is much more sensitive to carbon dioxide forcing than previously estimated by previous researchers. The implication of this finding is that the climate system is much more sensitive to perturbation and thus the risk of an abrupt or extreme response of the climate system is ever more likely. Such a major disruption to the climate signifies much greater risk to the global and of course our regional environment. Rapid sea level rise and serious alterations in the thermohaline circulation with resulting paradoxical cooling of the Northeast US and Western Europe becomes more conceivable. Viz:

Uncertainty in predictions of the climate response to rising levels
D. A. Stainforth et al, NATURE | VOL 433 | 27 JANUARY 2005.

A fourth finding is a recent report by the British Antarctic Survey that ominous signs of melting and other destabilizing changes appear to be developing on the West Antarctic Ice Sheet, something which had not been anticipated this soon in the evolution of global warming. See accompanying article from The Independent. Viz:

West Antarctic Ice Sheet Shows Early Signs of Disintegration
Dramatic change in West Antarctic ice could produce 16ft rise in sea levels
The Independent (UK), Feb. 2, 2005

Lastly, the new head of the IPCC whose appointment had been promoted by the Bush administration has recently declared that carbon dioxide levels in the atmosphere had reached a dangerous level. Viz:

Pachauri: Climate Approaching Point of "No Return"
Global Warming Approaching Point of No Return, Warns Leading Climate Expert
The Independent (U.K.), Jan. 23, 2005

He and other prominent scientists are calling for strict and rapid reductions in carbon emissions; the ranks of scientists calling for an upper limit of 400 or 450 ppd of CO2 by the end of this century is increasing. The Cape Wind project is a necessary first step for Massachusetts, New England and the United States to promote rapid transition to clean renewable wind energy for the purpose of protecting our global environment, our biosphere's stability, our health, our economy and our future.

Yours truly,

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Enclosure & attachments.

Boston Sunday Globe, February 20, 2005, p. A-15

Warming world could worsen pollution in Northeast, Midwest

Harvard researcher to report at AAAS meeting on projected decline in cleansing summer winds

Source: Copyright 2005,
Date: February 19, 2005

CAMBRIDGE, Mass. -- While science's conventional wisdom holds that pollution feeds global warming, new research suggests that the reverse could also occur: A warming globe could stifle summer's cleansing winds over the Northeast and Midwest over the next 50 years, significantly worsening air pollution in these regions.

Loretta J. Mickley, a research associate at Harvard University's Division of Engineering and Applied Sciences, will report on these findings Saturday, Feb. 19, at the annual meeting of the American Association for the Advancement of Science in Washington, D.C. Her work is based on modeling of the impact of increasing greenhouse gas concentrations on pollution events across the United States through 2050.

Using this model, Mickley and colleagues found that the frequency of cold fronts bringing cool, clear air out of Canada during summer months declined about 20 percent. These cold fronts, Mickley said, are responsible for breaking up hot, stagnant air that builds up regularly in summer, generating high levels of ground-level ozone pollution.

"The air just cooks," Mickley says. "The pollution accumulates, accumulates, accumulates, until a cold front comes in and the winds sweep it away."

Ozone is beneficial when found high in the atmosphere because it absorbs cancer-causing ultraviolet radiation. Near the ground, however, high concentrations are considered a pollutant, irritating sensitive tissues, particularly lung tissues.

"If this model is correct, global warming would cause an increase in difficult days for those affected by ozone pollution, such as people suffering with respiratory illnesses like asthma and those doing physical labor or exercising outdoors," Mickley says.

Mickley and her colleagues used a complex computer model developed by the Goddard Institute for Space Studies in New York, with further changes devised by her team at Harvard. It takes known elements such as the sun's luminosity, the earth's topography, the distribution of the oceans, the pull of gravity and the tilt of the earth's axis, and figures in variables provided by researchers.

Mickley gradually increased levels of greenhouse gases at rates projected by the Intergovernmental Panel on Climate Change, a group charged by the United Nations to study future climate variation. Her model looked at the effect the changing climate would have on the concentrations of two pollutants: black carbon particles -- essentially soot -- and carbon monoxide, which could also indicate ozone levels. When the model first indicated that future climate change would lead to higher pollution in the Northeast and Midwest, Mickley and her colleagues were a bit surprised.

"The answer lies in one of the basic forces that drive the Earth's weather: the temperature difference between the hot equator and the cold poles," Mickley says.

Between those extremes, the atmosphere acts as a heat distribution system, moving warmth from the equator toward the poles. Over mid-latitudes, low-pressure systems and accompanying cold fronts are one way for heat to be redistributed. These systems carry warm air poleward ahead of fronts and draw down cooler air behind fronts.

In the future, that process could slow down. As the globe warms, the poles are expected to warm more quickly than the equator, decreasing the temperature difference between the poles and the equator. The atmosphere would then have less heat to redistribute and would generate fewer low-pressure systems.

With fewer cold fronts sweeping south to break up hot stagnant air over cities, the air would sit in place, gathering pollutants. Mickley's model shows the length of these pollution episodes would increase significantly, even doubling in some locations.

Mickley's collaborators include Daniel J. Jacob and B. D. Field at Harvard and D. Rind of the Goddard Institute for Space Studies.

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(may become dated as article ages)

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Uncertainty in predictions of the climate response to rising levels of greenhouse gases

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The range of possibilities for future climate evolution[1–3] needs to be taken into account when planning climate change mitigation and adaptation strategies. This requires ensembles of multi-decadal simulations to assess both chaotic climate variability and model response uncertainty[1,4]. Statistical estimates of model response uncertainty, based on observations of recent climate change[10–14], admit climate sensitivities—defined as the equilibrium response of global mean temperature to doubling levels of atmospheric carbon dioxide—substantially greater than 5 K. But such strong responses are not used in ranges for future climate change[14] because they have not been seen in general circulation models. Here we present results from the 'climate*prediction*.net' experiment, the first multi-thousand-member grand ensemble of simulations using a general circulation model and thereby explicitly resolving regional details[15–21]. We find model versions as realistic as other state-of-the-art climate models but with climate sensitivities ranging from less than 2 K to more than 11 K. Models with such extreme sensitivities are critical for the study of the full range of possible responses of the climate system to rising greenhouse gas levels, and for assessing the risks associated with specific targets for stabilizing these levels.

As a first step towards a probabilistic climate prediction system we have carried out a grand ensemble (an ensemble of ensembles) exploring uncertainty in a state-of-the-art model. Uncertainty in model response is investigated using a perturbed physics ensemble[4] in which model parameters are set to alternative values considered plausible by experts in the relevant parameterization schemes[9]. Two or three values are taken for each parameter (see Methods); simulations may have several parameters perturbed from their standard model values simultaneously. For each combination of parameter values (referred to here as a 'model version') an initial-condition ensemble[22] is used, creating an ensemble of ensembles. Each individual member of this grand ensemble (referred to here as a 'simulation') explores the response to changing boundary conditions[22] by including a period with doubled CO_2 concentrations.

The general circulation model (GCM) is a version of the Met Office Unified Model consisting of the atmospheric model HadAM3[23], at standard resolution[9] but with increased numerical stability, coupled to a mixed-layer ocean. This allows us to explore the effects of a wide range of uncertainties in the way the atmosphere is represented, while avoiding a long spin-up for each model version. Each simulation involves three 15-year phases: (1) calibration, to deduce the ocean heat-flux convergence field used in the subsequent phases; (2) control, used to quantify the relevance of the particular model version and heat-flux convergence field; and (3) doubled CO_2, to explore the response to changing boundary conditions.

Individual simulations are carried out using idle processing capacity on personal computers volunteered by members of the general public[17]. This distributed-computing method[16,18,19] leads to a continually expanding data set of results, requiring us to use a specified subset of data available at a specific point in time. The analysis presented here uses 2,578 simulations (>100,000 simulated years), chosen to explore combinations of perturbations in six parameters.

The 2,578 simulations contain 2,017 unique simulations (duplicates are used to verify the experimental design—see Methods). Figure 1a shows the grand ensemble frequency distribution of global mean, annual mean, near-surface temperature (T_g) in these 2,017 simulations, as it develops through each phase. Some model versions show substantial drifts in the control phase owing to the use of a simplified ocean (see Supplementary Information). We remove unstable simulations (see Methods) and average over initial-condition ensembles of identical model versions to reduce sampling uncertainty. The frequency distribution of initial-condition-ensemble-mean time series of T_g for the resulting 414 model versions (for which the initial-condition ensembles involve 1,148 independent stable simulations) is shown in Fig. 1b. Six of these model versions show a significant cooling tendency in the doubled-CO_2 phase. This cooling is also due to known limitations with the use of a simplified ocean (see Supplementary Information) so these simulations are excluded from the remaining analysis of sensitivity.

The frequency distribution of the simulated climate sensitivities (see Methods) for the remaining model versions is shown in Fig. 2a and ranges from 1.9 to 11.5 K. Two key features are that relatively few model versions have sensitivities less than 2 K, and the long tail of the distribution extending to very high values; 4.2% are >8 K. Most sensitivities cluster round 3.4 K, the value for the unperturbed model, suggesting that many of the parameter combinations

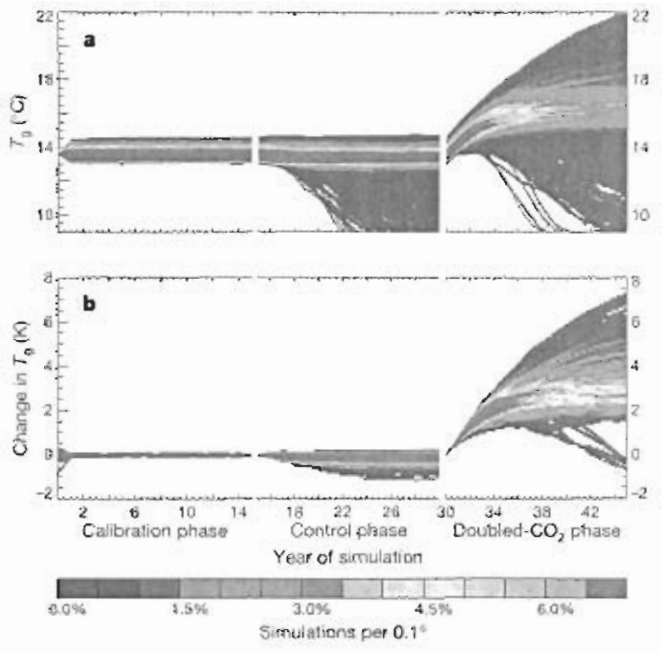

Figure 1 Frequency distributions of T_g (colours indicate density of trajectories per 0.1 K interval) through the three phases of the simulation. **a**, Frequency distribution of the 2,017 distinct independent simulations. **b**, Frequency distribution of the 414 model versions. In **b**, T_g is shown relative to the value at the end of the calibration phase and where initial-condition ensemble members exist, their mean has been taken for each time point.

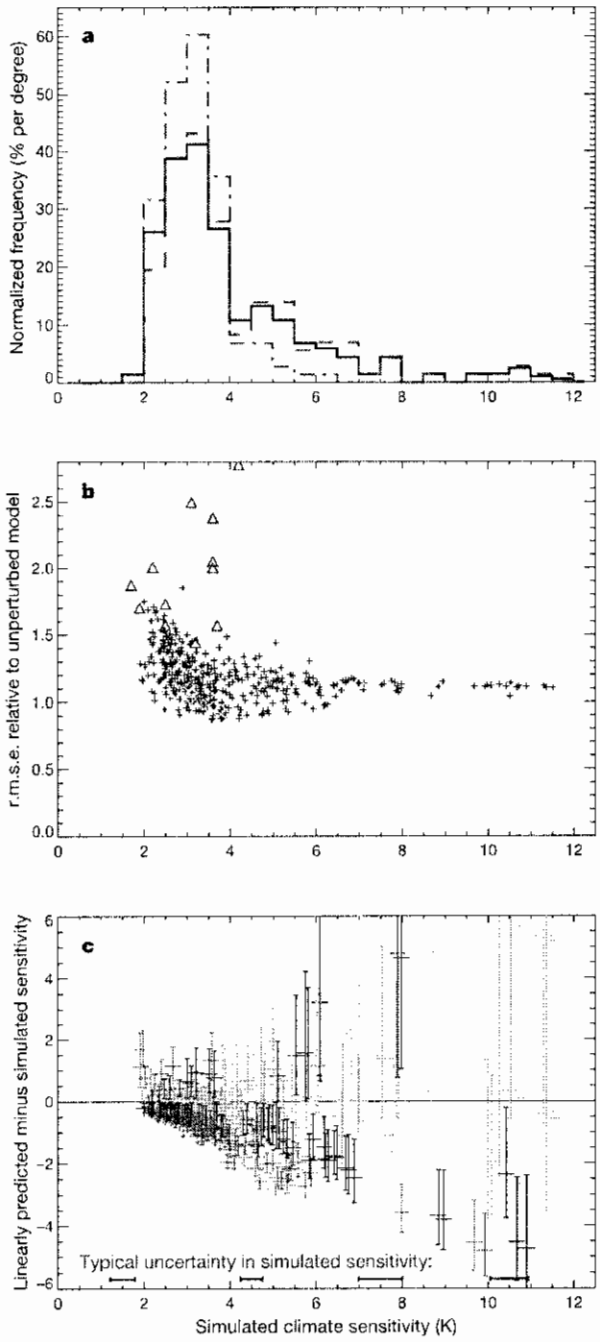

Figure 2 The response to parameter perturbations. **a**, The frequency distribution of simulated climate sensitivity using all model versions (black), all model versions except those with perturbations to the cloud-to-rain conversion threshold (red), and all model versions except those with perturbations to the entrainment coefficient (blue). **b**, Variations in the relative r.m.s.e. of model versions. The unperturbed model is shown by the red diamond. Model versions with only a single parameter perturbed are highlighted by yellow diamonds. The triangles show the CMIP II models for which data are available; HadCM3 (having the same atmosphere as the unperturbed model but with a dynamic ocean) is shown in red and the others in blue. **c**, Linear prediction of climate sensitivity based on summing the change in λ for the relevant single-parameter-perturbation model versions, to estimate λ when multiple perturbations are combined. Error bars show the resulting uncertainty ($\pm$ one sigma) caused by the combination of a number of $\Delta\lambda$ values where each λ has an uncertainty deduced from the initial-condition ensembles having only a single parameter perturbed. Linear predictions within one sigma of the simulated value are shown in green, between one and two sigma in black, and above two sigma in red. Mean uncertainties in the simulated value (two-sigma range, inferred from the initial-condition ensembles) are shown at the bottom for four regions of sensitivity (0–3, 3–6, 6–9, 9–12).

explored have relatively little effect on this global variable. There are a number of possible reasons for this clustering: the relevant processes may in fact have only a limited impact on sensitivity, the parameter ranges used may be too small to influence substantially the response in this model, and/or multiple perturbations may have mutually compensating effects when averaged on global scales. Of course, many significant regional impacts are invisible in a global average.

The range of sensitivities across different versions of the same model is more than twice that found in the GCMs used in the IPCC Third Assessment Report[14]. The possibility of such high sensitivities has been reported by studies using observations to constrain this quantity[9,11,24,25], but this is the first time that GCMs have generated such behaviour. The shape of the distribution is determined by the parameters selected for perturbation and the perturbed values chosen, which were relatively arbitrary. Model developers provided plausible high and low values for each model parameter; however, we cannot interpret these as absolute upper and lower bounds because experts are known to underestimate uncertainty even in straightforward elicitation exercises where the import of the question is clear[26]. In our case even the physical interpretation of many of these parameters is ambiguous[27]. We can illustrate the importance of the parameter choices by subsampling the model versions. If all perturbations to one parameter (the cloud-to-rain conversion threshold) are omitted, the red histogram in Fig. 2a is obtained, with a slightly increased fraction (4.9%) of model versions >8 K. If perturbations to another parameter (the entrainment coefficient) are omitted, the blue histogram in Fig. 2a is obtained, with no model versions >8 K. (See Supplementary Information for further sensitivity analyses.)

Can either high-end or low-end sensitivities be rejected on the basis of the model-version control climates? Fig. 2b suggests not; it illustrates the relative ability of model versions to simulate observations using a global root-mean-squared error (r.m.s.e.) normalized by the errors in the unperturbed model (see Methods). For all model versions this relative r.m.s.e. is within (or below) the range of values for other state-of-the-art models, such as those used in the second Coupled Model Inter Comparison (CMIP II) project[28] (triangles). The five variables used for this comparison are each standard variables in model evaluation and inter-comparison exercises[29] (see Methods). This lack of an observational constraint, combined with the sensitivity of the results to the way in which parameters are perturbed, means that we cannot provide an objective probability density function for simulated climate sensitivity. Nevertheless, our results demonstrate the wide range of behaviour possible within a GCM and show that high sensitivities cannot yet be neglected as they were in the headline uncertainty ranges of the IPCC Third Assessment Report (for example, the 1.4–5.8 K range for 1990 to 2100 warming).[14] Further, they tell us about the sensitivities of our models, allowing better-informed decisions on resource allocation both for observational studies and for model development.

Can we coherently predict the model's response to multiple parameter perturbations from a small number of simulations each of which perturbs only a single parameter[9]? The question is important because it bears on the applicability of linear optimization methods in the design and analysis of smaller ensembles. Figure 2c shows that assuming that changes in the climate feedback parameter[14] λ combine linearly provides some insight, but fails in two important respects. First, combining uncertainties gives large fractional uncertainties for small predicted λ and hence large uncertainties for high sensitivities. This effect becomes more pronounced the greater the number of parameters perturbed. Second, this method systematically underestimates the simulated sensitivity, as shown in Fig. 2c, and consequently artificially reduces the implied likelihood of a high response. Furthermore, more than 20% of the linear predictions are more than two standard errors from the

simulated sensitivities. Thus, comprehensive multiple-perturbed-parameter ensembles appear to be necessary for robust probabilistic analyses.

Figure 3 shows the initial-condition ensemble-mean of the temperature and precipitation changes for years 8–15 after doubling CO_2 concentrations, for three model versions: (1) the unperturbed model; (2) a version with low sensitivity; and (3) a version with high sensitivity (see Supplementary Information for details of the control climates in these model versions). All three models show the familiar increased warming at high latitudes and the overall surface-temperature pattern scales with sensitivity. Even in the low-sensitivity model version the warming in certain regions is substantial, exceeding 3 K in Amazonia and 4 K in much of North America. The precipitation field shows a greater variety of response. For instance, this particular low-sensitivity model version shows a region of substantially reduced precipitation east of the Mediterranean; something not evident in either the standard or high-sensitivity model versions shown. It is critical to note that model versions with similar sensitivities often also show differences in such regional details[3]. The use of a GCM-based grand ensemble allows the significance of such details to be ascertained.

Thanks to the participation and enthusiasm of tens of thousands of individuals world-wide we have been able to discover GCM versions with comparatively realistic control climates and with sensitivities covering a much wider range than has ever been seen before. These results are a critical step towards a better under-

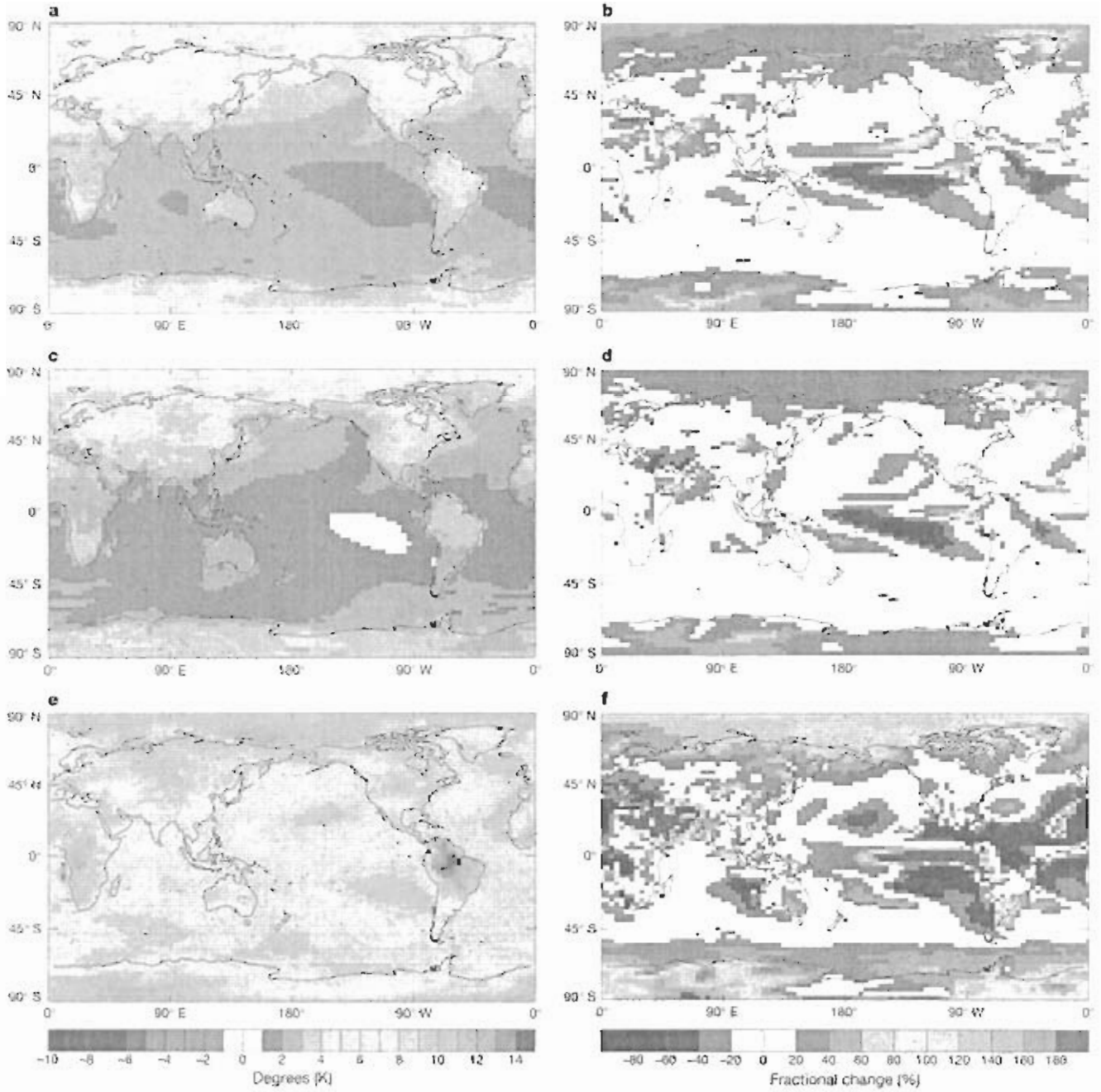

Figure 3 The temperature (left panels) and precipitation (right panels) anomaly fields in response to doubling the CO_2 concentrations. **a**, **b**, The unperturbed model (simulated climate sensitivity, 3.4 K). **c**, **d**, A model version with low simulated climate sensitivity (2.5 K). **e**, **f**, A model version with high simulated climate sensitivity (10.5 K). These fields are the means of years eight to fifteen after the change of forcing is applied, averaged over initial-condition ensemble members; they are not the equilibrium response.

standing of the potential responses to increasing levels of greenhouse gases, regional and seasonal impacts, our models and internal variability. Future experiments will include a grand ensemble of transient simulations of the years 1950–2100 using a model with a fully dynamic ocean. □

Methods

Model simulations

Participants in the climate*prediction*.net experiment download an executable version of a full GCM. They are allocated a particular set of parameter perturbations and initial conditions enabling them to run one simulation: that is, one member of the grand ensemble. Their personal computer then carries out 45 years of simulation and returns results to the project's servers. Over 90,000 participants from more than 140 countries have registered to date. The model, based on HadSM3[30], is a climate resolution version of the Met Office Unified Model with the usual horizontal grid of 3.75° longitude × 2.5° latitude and 19 layers in the vertical. The ocean consists of a single thermodynamic layer with ocean heat transport prescribed using a heat-flux convergence field that varies with position and season but has no inter-annual variability. For each simulation the heat-flux convergence field is calculated in the calibration phase where sea surface temperatures (SSTs) are fixed; in subsequent phases the SSTs vary according to changes in the atmosphere–ocean heat flux. The initial-condition ensemble members have different starting conditions for the calibration and therefore allow for uncertainty in the heat-flux convergence fields used in the control and doubled-CO_2 phases.

Data quality

Most model simulations are unique members of the grand ensemble, each being a combination of perturbed model parameters and perturbed initial conditions. To evaluate the reliability of the experimental design a certain number of identical simulations are distributed; most give identical results. Where they do not, they are usually very similar, suggesting that a few computational bits were lost at some point and consequently they are essentially different members of the initial-condition ensemble. In these cases the mean of the simulations is taken.

There are a small number of simulations (1.6%) which show obvious flaws in the data: for example, sudden jumps of data values from of the order of 10^2 to of the order of 10^8. These probably result from loss of information, for instance during a PC shut-down at a critical point in processing or a result of machine 'overclocking'. These are removed from this analysis. Finally, runs that show a drift in T_g greater than 0.02 K yr^{-1} in the last eight years of the control are judged to be unstable and are also removed from this analysis.

Perturbations

Perturbations are made to six parameters, chosen to affect the representation of clouds and precipitation: the threshold of relative humidity for cloud formation, the cloud-to-rain conversion threshold, the cloud-to-rain conversion rate, the ice fall speed, the cloud fraction at saturation and the convection entrainment rate coefficient. This is a subset of those explored by ref. 9. In each model version each parameter takes one of three values (the same values as those used by ref. 9); for cloud fraction at saturation only the standard and intermediate values are used. As climate*prediction*.net continues, the experiment is exploring 21 parameters covering a wider range of processes and values.

Climate sensitivity calculations

The simulated climate sensitivity is taken as the difference between the predicted equilibrium T_g in the doubled-CO_2 and control phases. The latter is simply the mean of the last eight years of that phase. The former is deduced by fitting the change in T_g, relative to the start of the phase, to the exponential expression: $\Delta T_g(t) = \Delta T_{g\,(2\times CO2)}(1 - \exp(-t/\tau))$, giving us a value of $T_{g\,(2\times CO2)}$ that allows for uncertainty in the response timescale, τ. Even for high simulated climate sensitivities the uncertainty in this procedure is small (see Fig. 2c) and alternative methods give similar results. Because it is based on the first 15 years' response, the λ associated with this simulated climate sensitivity reflects the decadal timescale feedbacks in the system. Longer, centennial-timescale processes could affect the ultimate value of the equilibrium sensitivity and are best studied using models with dynamic oceans and cryospheres.

Relative root-mean-square error

Models are compared with gridded observations of annual mean temperature, sea level pressure, precipitation and atmosphere–ocean sensible and latent heat flux. The total error in variable j is defined simply as:

$$\varepsilon_{js}^2 = (\Sigma_i w_i (m_{is} - o_i)^2 \quad (1)$$

where m_{is} is the simulated value in grid-box i averaged over the last 8 yr of the control phase of simulation s, o_i is the observed value[9] and w_i is an area weighting. Mean squared errors relative to the standard model are computed as:

$$\varepsilon_s^2 = (\Sigma_j \varepsilon_{js}^2 / \varepsilon_{jn}^2)/N \quad (2)$$

where N is the number of variables and ε_{jn}^2 is the mean ε_{js}^2 for the unperturbed model, and averaged across initial-condition ensembles. Normalizing errors in individual variables by the corresponding errors in the unperturbed model ensures that all variables are given equal weight. The relative r.m.s.e. is plotted in Fig. 2b. Note that because we do not have an explicit and adequate noise model (ε_{js}^2 does not account for correlations, for example), these 'scores' cannot be interpreted explicitly in terms of likelihood, but nevertheless provide an indication of the relative merits of different model control climates.

For the CMIP II data the $(m_i - o_i)^2$ term is reduced by the variance of the mean to compensate for the greater variability found in models with dynamic oceans.

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Supplementary Information accompanies the paper on **www.nature.com/nature**.

Acknowledgements We thank all participants in the 'climate*prediction*.net' experiment and the many individuals who have given their time to make the project a reality and a success. This work was supported by the Natural Environment Research Council's COAPEC, e-Science and fellowship programmes, the UK Department of Trade and Industry, the UK Department of the Environment, Food and Rural Affairs, and the US National Oceanic and Atmospheric Administration. We also thank Tessella Support Services plc, Research Systems Inc., Numerical Algorithms Group Ltd, Risk Management Solutions Inc. and the CMIP II modelling groups.

Competing interests statement The authors declare that they have no competing financial interests.

Correspondence and requests for materials should be addressed to D.A.S. (d.stainforth1@physics.ox.ac.uk).

Pachauri: Climate Approaching Point of "No Return"
Global Warming Approaching Point of No Return, Warns Leading Climate Expert

The Independent (U.K.), Jan. 23, 2005

Global warning has already hit the danger point that international attempts to curb it are designed to avoid, according to the world's top climate watchdog.

Dr Rajendra Pachauri, the chairman of the official Intergovernmental Panel on Climate Change (IPCC), told an international conference attended by 114 governments in Mauritius this month that he personally believes that the world has "already reached the level of dangerous concentrations of carbon dioxide in the atmosphere" and called for immediate and "very deep" cuts in the pollution if humanity is to "survive".

His comments rocked the Bush administration - which immediately tried to slap him down - not least because it put him in his post after Exxon, the major oil company most opposed to international action on global warming, complained that his predecessor was too "aggressive" on the issue.

A memorandum from Exxon to the White House in early 2001 specifically asked it to get the previous chairman, Dr Robert Watson, the chief scientist of the World Bank, "replaced at the request of the US". The Bush administration then lobbied other countries in favour of Dr Pachauri - whom the former vice-president Al Gore called the "let's drag our feet" candidate, and got him elected to replace Dr. Watson, a British-born naturalised American, who had repeatedly called for urgent action.

But this month, at a conference of Small Island Developing States on the Indian Ocean island, the new chairman, a former head of India's Tata Energy Research Institute, himself issued what top United Nations officials described as a "very courageous" challenge.

He told delegates: "Climate change is for real. We have just a small window of opportunity and it is closing rather rapidly. There is not a moment to lose."

Afterwards he told The Independent on Sunday that widespread dying of coral reefs, and rapid melting of ice in the Arctic, had driven him to the conclusion that the danger point the IPCC had been set up to avoid had already been reached.

Reefs throughout the world are perishing as the seas warm up: as water temperatures rise, they lose their colours and turn a ghostly white. Partly

as a result, up to a quarter of the world's corals have been destroyed.

And in November, a multi-year study by 300 scientists concluded that the Arctic was warming twice as fast as the rest of the world and that its ice-cap had shrunk by up to 20 per cent in the past three decades.

The ice is also 40 per cent thinner than it was in the 1970s and is expected to disappear altogether by 2070. And while Dr. Pachauri was speaking, parts of the Arctic were having a January "heatwave", with temperatures eight to nine degrees centigrade higher than normal.

He also cited alarming measurements, first reported in The Independent on Sunday, showing that levels of carbon dioxide (the main cause of global warming) have leapt abruptly over the past two years, suggesting that climate change may be accelerating out of control.

He added that, because of inertia built into the Earth's natural systems, the world was now only experiencing the result of pollution emitted in the 1960s, and much greater effects would occur as the increased pollution of later decades worked its way through. He concluded: "We are risking the ability of the human race to survive."

West Antarctic Ice Sheet Shows Early Signs of Disintegration
Dramatic change in West Antarctic ice could produce 16ft rise in sea levels

The Independent (UK), Feb. 2, 2005

British scientists have discovered a new threat to the world which may be a result of global warming. Researchers from the Cambridge-based British Antarctic Survey (BAS) have discovered that a massive Antarctic ice sheet previously assumed to be stable may be starting to disintegrate, a conference on climate change heard yesterday. Its collapse would raise sea levels around the earth by more than 16 feet.

BAS staff are carrying out urgent measurements of the remote points in the West Antarctic Ice Sheet (WAIS) where they have found ice to be flowing into the sea at the enormous rate of 250 cubic kilometres a year, a discharge alone that is raising global sea levels by a fifth of a millimetre a year.

Professor Chris Rapley, the BAS director, told the conference at the UK Meteorological Office in Exeter, which was attended by scientists from all over the world, that their discovery had reactivated worries about the ice sheet's collapse.

Only four years ago, in the last report of the UN's Intergovernmental Panel on Climate Change (IPCC), worries that the ice sheet was disintegrating were firmly dismissed.

Professor Rapley said: "The last IPCC report characterised Antarctica as a slumbering giant in terms of climate change. I would say it is now an awakened giant. There is real concern."

He added: "The previous view was that WAIS would not collapse before the year 2100. We now have to revise that judgement. We cannot be so sanguine." Collapse of the WAIS would be a disaster, putting enormous chunks of low-lying, desperately poor countries such as Bangladesh under water - not to mention much of southern England.

Boston Urban Asthma Coalition

c/o the Medical Foundation, 622 Washington Street, 2nd Floor
Dorchester MA 02124, (617)279-2271, www.buac.org

February 24, 2005

Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

C04908

Sent via e-mail, original sent under separate cover

Dear Ms. Adams:

I am writing on behalf of Boston Urban Asthma Coalition (BUAC) to express our strong support for Cape Wind Associates' permit application to install 130 wind turbine generators and associated cable in the Nantucket Sound. We believe this facility will have a positive public health benefit for residents of Massachusetts and Boston - especially those with respiratory ailments such as asthma – by eliminating harmful coal pollution. In addition, it will help facilitate other alternative energy projects for the New England area and across the nation, thus promoting less polluting sources of energy.

The BUAC is a coalition of community-based organizations, government agencies, medical professionals, and individuals who are concerned with the factors in low-income communities that contribute to the rising prevalence of asthma within Boston. We are committed to ensuring that every child with asthma in the city lives in healthy housing, attends healthy schools, breathes healthy air, and has access to quality health care.

We support this permit application because it will have positive health benefit for Boston residents with asthma. Asthma is one of the most common chronic conditions among children in the United States, affecting an estimated 4.8 million children – 1 in 15, according to the Centers for Disease Control and Prevention. Asthma rates for children are worsening with children less than 5 years of age having an increase of 160% between 1980 and 1994 and children 5 to 14 years of age experiencing a 74% increase. Although some current studies suggest that this rate of increase may be slowing, the problem is still exceptionally severe.

Reports released by the Asthma Regional Council (ARC) in the last two years have provided troubling information on asthma in Massachusetts and the New England region. One report found that Massachusetts has the highest adult asthma rate in the country.[1] In fact, the New England region has five of the six highest state asthma rates in the country. The asthma rate for Massachusetts children is 12.3%, the same as the New England regional rate.[2] Several factors have been identified as important: occupational exposures, socioeconomic differences, the quality and age of the housing stock, outdoor air quality and seasonal differences as factors that vary across the country.

The exact cause – or causes - of the increase in asthma prevalence and its disproportionate burden on poor urban families is unclear. While family history increases the risk of inheriting asthma, experts also agree that certain environmental exposures contribute to asthma prevalence, and certainly to asthma exacerbation.[1] In "Clearing the Air: Asthma and Indoor Air Exposures," a panel of experts concluded that house dust mites, environmental tobacco

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[1] "Asthma in New England, Part 1: Adults," Asthma Regional Council, May 2003. The Massachusetts rate is 9.5%. The rate for New England regional as a whole was 8.9%, significantly higher that the U.S. rate of 7.1%

[2] Since the Center for Disease Control does not collect similar childhood asthma rates, the Massachusetts childhood asthma rate cannot be compared nationally.

smoke and cockroaches contribute to the development of asthma.[3] In addition, the panel found that triggers such as pets, cockroaches, mold, cold viruses, and certain air pollutants (particulates, NOx) contribute to asthma exacerbations.[4] Other recent studies have found a strong link between the development of asthma and exposure to diesel exhaust particles and nitrogen dioxide[MB2].[5]

Power plant produces pollutants harmful to respiratory health. The pollutants of main concern are carbon monoxide, sulfur dioxide, nitrogen monoxide, and fine particle soot. Power plant pollution contains significant levels of small particles (known as fine particulate matter) that when breathed into the lungs, pose serious health risks. Exposure to these fine particles can aggravate asthma, cause lung damage and even result in premature death. According to the American Lung Association, "(a) recent study showed a 17% increase in mortality risk in areas with higher concentrations of small particles... Particulate matter air pollution is especially harmful to people with lung disease such as asthma and chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema. Exposure to particulate air pollution can trigger asthma attacks and cause wheezing, coughing, and respiratory irritation in individuals with sensitive airways."

Other pollutants found to aggravate asthma and alter the lungs' defense mechanisms are sulfur dioxide and nitrogen dioxide. According to the Environmental Defense, "(s)tudies for the EPA have documented that most asthmatics experience asthma attacks and other symptoms when exposed to high 5-minute concentrations of sulfur dioxide, such as those caused by highly concentrated plumes from large industrial sources." Nitrogen oxides have been found to contribute to the formation of ozone, production of particulate matter pollution, and acid deposition. Nitrogen dioxide has been shown to irritate lung tissue, cause bronchitis and pneumonia, and reduce resistance to respiratory infections.

If we do not act collectively to improve air quality through measures such as the Cape Wind facility, our air quality could worsen. A recent study predicted that global warming may worsen pollution in the northern United States, thus compounding the health impacts of exposure to power plant pollution. Since New England already suffers from higher than average asthma rates, it is imperative that all efforts are made to reduce air pollution. It is for this reason that we support the Cape Wind permit application.

Sincerely,

Jean Zotter, J.D.
Executive Director

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[3] Institute of Medicine, Division of Health Promotion and Disease Prevention, "Clearing the Air: Asthma and Indoor Air Exposure, " 2000.
[4] Ibid.
[5] Pnadya, et.al. "Diesel Exhaust and Asthma: Hypotheses and Molecular Mechanisms of Action," Environmental Health Perspectives Feb. 2002; Peters, et.al. "A Study of Twelve Southern California Communities with Differing Levels and Types of Air Pollution," Am. J. Respir.Crit. Care Med. 1999; McConnell, et.al. "Asthma in Exercising Children Exposed to Ozone: a Cohort Study," Lancet, Feb. 2002.

[1][JZ]

Page: 2
[MB2] Add citation and clarify facts.

Adams, Karen K NAE

From: Donald Mroz [donmroz@wavesofchange.com]
Sent: Thursday, February 24, 2005 11:40 PM
To: anne.canaday@state.ma.us; Energy, Wind NAE
Subject: Proposed Wind Farm

001909

Dear Madam,

I am a full-time resident on Nantucket, Massachusetts, writing to lend my citizen voice toward your decision regarding the Cape Wind Associates application for a wind energy farm in Nantucket Sound.

First, let me say thank you for the opportunity to voice my opinion, and thank you for the public meetings which you held to attain input from the citizens and the special interest groups.

Secondly, let me voice my strong opposition to this proposed project. Foremost, I truly believe that Nantucket Sound is a National treasure which is far to precious to clutter with windmills. The aesthetics in this situation are far more important than providing an alternative source of energy, which I am uncertain is truly necessary in this local at this time.

You have undoubtedly heard from many, many people, and the decision is a difficult one to say the least. I hope your decision making process will not be limited to logic only, but also to hear the voices of the many who live in the vicinity who love this land and waterscape. I would implore you to also listen to the hearts and emotions of the hundreds and thousands who use these waters on a regular basis.

In addition to the aesthetics, and the emotional aspect of this decision, there are valid and logical reasons not to undertake this effort in Nantucket Sound. Not the least of which is the potential negative ecological impacts on the sea life, bird life, and the sound in general.
I fear there are very mixed messages from various groups who have studied this and no hard and fast data exists which can prove this is acceptable to the environment.

Lastly, as a recreational sailor in the Sound now for 7 years, I am very concerned about the Navigational hazards which these wind turbines could cause. At night, and in fog I can see a disaster waiting to happen.

Please do not allow the installation of these wind turbines and please deny this construction. I again thank you for the opportunity to provide input to your decision. Sincerely, Donald W. Mroz

Donald Mroz, Ph.D.
268 Madaket Rd,
Nantucket, MA 02554
Office = 508-228-5398
Cell = 508-325-1506

Adams, Karen K NAE

From: Lois Sturm [loisnen@yahoo.com]
Sent: Thursday, February 24, 2005 11:42 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: Cape Wind

004910

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Kirk-Adams:

I live across the street from a power plant. It burns oil and gas. People in my neighborhood breathe the fumes and the particulate matter. They get cancer and heart disease. Their children have asthma.

It would be so much healthier if the power plant were a wind turbine, but we do not have that choice.

Unless Cape Wind is right smack in the middle of a bird or fish migration route and thus interferes with natural processes, I think the project should proceed. It seems like one of the least harmful ways to produce electricity, certainly less dangerous than the Plymouth nuclear power plant which lies at the mouth of the Cape. And the wind turbines, if sited properly, will kill fewer animals, including human animals, than power plants that burn fossil or nuclear fuel.

Please go ahead and produce power in the way that creates the most jobs and kills the fewest people. The Cape Wind project is a great way for New England to start the 21st century - engaging the clean technologies of the future, not the polluting combustion of the 19th century.

Sincerely,

Lois M. Sturm
628 East 14th Street #6
New York, NY 10009

(the Con Ed power plant is at 700 East 14th Street)

cc:
Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Environmental Policy Act Office
Attn: Anne Canaday
100 Cambridge Street, Suite 900
Boston, MA 02114

February 24, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742
wind.energy@usace.army.mil

004911

To Karen Kirk-Adams:

I am writing to express my support of the Cape Wind energy project in Nantucket Sound. This wind energy project is a good and necessary step in the state's and the nation's move toward a more sustainable future. The Cape Wind project would help Massachusetts meet its own Renewable Portfolio Standards (RPS) and address the inexorable growth of the region's power needs. It is clear from the Draft Environmental Impact Statement (DEIS) that the project poses little threat to the Nantucket area environmentally or economically.

The Cape Wind project, as proposed, is also consistent with values of Environmental Justice. The DEIS states correctly, "There will be no environmental justice issues created by construction or operation of the Cape Wind project, based upon federal guidance" (DEIS Executive Summary p. 1-23). However, I would like to argue that Environmental Justice issues *are* created by construction or operation of the Cape Wind project, albeit in a positive sense. More importantly, denial of the Cape Wind project would ineluctably lead to environmental *injustice*.

Growing demand for power in New England and Massachusetts means that more power must be supplied. This likely means expanding production at existing facilities, which include six coal-fired and one nuclear power plant in Massachusetts. Expansion of these existing sources (or simply preventing them from retiring), means that those communities surrounding these existing facilities must continue to bear the brunt of the region's power needs. Clear the Air, a local nonprofit group, has shown that poor children, asthmatics and other vulnerable groups are disproportionately represented in the areas immediately surrounding these facilities. At the same time, the erection of new facilities, which cannot be located in 'Environmental Justice communities,' and politically cannot be located in more privileged communities, means that weight of these facilities will fall on those not burdened enough to be classified as an 'Environmental Justice community,' but not powerful enough to defend themselves. A second tier of inequalities is created.

As with many resources that our society uses, electricity is not consumed uniformly by the populace. Not surprisingly, surveys and other studies consistently show that power consumption is positively correlated with socioeconomic status.[1] Individuals or households in higher income brackets consume absolutely and relatively more power than their lower income counterparts. This reality is expressed spatially as higher income areas show clusters of higher energy use. At the same time, proximity to power generating facilities is negatively correlated with income. Individuals or households in the higher income brackets are less likely to live near power generating facilities than their lower income counterparts. This is clearly the case in Massachusetts.

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[1] Energy Information Administration, *Residential Energy Consumption Survey*, 2001.

It seems unremarkable to assume some principle of fairness in the relation between consumption and cost. Those who consume should bear some of the costs of their consumption. We need to incorporate a proactive principle of fairness in the siting of facilities if we want a meaningful consideration of Environmental Justice. At present, it is a negative policy aimed at preventing overt or intentional discrimination. The Cape Wind project offers a unique opportunity to meet energy needs for the state and region in a way that meets economic development needs, brings the state closer to its RPS goals, and avoids direct impact on those communities that already bear more than their share of socially necessary facilities. From an Environmental Justice perspective, the success of this project is directly and undeniably implicated in the production of environmental justice or its opposite. The Cape Wind project, as proposed, is welcome, necessary and socially constructive.

Sincerely,

Marcos Luna
Assistant Professor
Department of Geography
Salem State College

Adams, Karen K NAE

From: neilgood@juno.com
Sent: Friday, February 25, 2005 12:00 AM
To: Energy, Wind NAE
Cc: anne.canaday@state.ma.us
Subject: Comment on Cape Wind

004912

Dear Ms Adams,

Before a final decision is made on the Cape Wind project, I believe the Army Corps of Engineers should carefully review information found in a e-mail message archived on a Vanderbilt University web page.
A link to the message and most of the original text is pasted below.

Sincerely,

Neil Good
56 Scituate Road
Mashpee, MA 02649

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http://www.vanderbilt.edu/radsafe/0405/msg00051.html

"A Flightly Wind- Quebec Style"
[By 'Jaro']

Here in Quebec we have the largest two windmill farms in Canada -- one in Matane and one in Cap-Chat, both of which are located in the east of the province, in the Gaspesie peninsula.

The operator of the two facilities, the Groupe Axor, recently submitted a detailed report to Quebec's Energy Board.
It includes a comprehensive set of data, including many graphs of the output of the plants and local wind speeds over the last several years.
The results are quite shocking to windmill advocates -- they were reported on a cover story of the April 27 [2004] edition of Montreal's French-language newspaper, La Presse.

Article Title- "The Wind Mills Do Not Hold To Their Promises."

The Axor document, under the label "Mémoire Groupe Axor (23 avril 2004)," is posted at http://www.regie-energie.qc.ca/audiences/3526-04/MemoiresParticip3526/Memoire_GroupeAxor_23avr04.pdf

....its a 2.58 megabyte pdf file, encrypted to prevent copying (but you can still download it and view it).

As in the La Presse article, the Axor document states (translation), " The reality based over five years of operation is that during the best years, when all functioned without any bugs, the capacity factor (CF) was 18% and that it was 16,5 % on average for the last 12 months of production."

Two graphs in particular are interesting : in March of this year, the
Cap-Chat windmill park had an average CF of 14.5%. In June of last year, it was just 10.3%. The La Presse article continued, " Axor relied on the economic models prepared by internationally reputed experts, but their forecasts proved far too optimistic.
" We paid for our education, our knowledge is based on actual experience ", commented Yvan Dupont, president of the company, owner since five years of 76 wind mills at Cape-Chat and 57 at Matane [each of 1 megawatt capacity].
[.....]
According to the Axor engineer, new windmill technology will improve their output, but not enormously." It is estimated that that will not increase capacity factors by more than about 4 %, meaning they will be able to reach 22 %, which is still very far from what many imagined, always based on theoretical analyses."
Because of this poor performance, electricity produced by windmills in the Gaspésie is much more expensive than forecast

and Axor keeps losing money with its two plants, whose energy is sold to Hydro-Quebec. "
<end quote>

The next to last graph in the Axor report is also very interesting, as it compares the 16.5% CF of the last 12 months, to the "facteur d'utilisation moyen initialement projete par les experts = 30%" (which I don't think requires translation).

Incidentally, this CONTRADICTS the statement in the LaPresse article, that "En théorie, le facteur d'utilisation des éoliennes est de 25 %,
c'est-à-dire qu'elles produisent de l'énergie pendant 25 % du temps."

.....evidently, someone was yet again trying to downplay the drastic
difference between optimistic projections of wind-power advocates, and
real-life experience !!

One of the pro-wind submissions to the Energy Board included comparison
calculations based on a 34% CF for windmills and 60%CF for a natural gas plant -- although only the latter was stated, while for the the former you have to derive it yourself, from their figures of 2197MW installed capacity vs. 6.5 TWh annual output -- see "Doc-7-1 - Éolien vs thermique-tableaux" at http://www.regie-energie.qc.ca/audiences/3526-04/MemoiresParticip3526/Memoir
e_RRSE_Doc-7-1_Expt-Reid-tblx_21avr04.pdf (764 KB), submitted by RRSE, the REGROUPEMENT POUR LA RESPONSABILITÉ SOCIALE DES ENTREPRISES.

<quote>
Le RRSE regroupe trente-cinq (35) membres dont le statut est reconnu
officiellement.
Parmi ces membres, se retrouvent :
- vingt-deux (22) corporations religieuses,
- deux (2) associations religieuses,
- onze (11) membres individuels.
Le RRSE, en conformité avec sa mission d.influencer la responsabilité
sociale des entreprises, se préoccupe et privilégie une approche de
développement durable pour la croissance desdites entreprises. Son
opposition au projet du Suroît s.explique à plusieurs niveaux :
<snip>

Cheers,

Jaro

Adams, Karen K NAE

From: DanMClark@aol.com
Sent: Thursday, February 24, 2005 11:57 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us; pdascombe@capecodcommission.org
Subject: Cape Wind Proposal Comment 2/24/05

004913

Dear Madam/Sir:

I have read sections of the DEIS which confirm my understanding of the energy situation that the country faces. Increasing demand, increasing dependence on foreign sources of energy, and increasing use of fossil fuels does not bode well for the country. A sizable project of offshore wind power is a step in the right direction. The project alone is a very small piece of the whole energy picture, but clearly signals to private industry that the political climate will embrase economically viable alternatives to traditional energy production.

People in areas of the country which produce fossil fuels (Alaska and Texas for example) are baffled by a "liberal" state like Massachusetts not wanting offshore wind in their region. They don't understand how the Senators from Massachusetts which fight against ANWR, can also fight a wind project. Where do they want their energy to come from?

I urge you to support the Cape Wind project as proposed.

Thank you,
Dan Clark
46 Millfield St.
Woods Hole, MA 02543

Adams, Karen K NAE

From: Tom Wineman [twineman@cape.com]
Sent: Thursday, February 24, 2005 11:48 PM
To: Energy, Wind NAE
Subject: Cape Wind

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742-2751

The Attached Comment is also pasted below.

Date: 24 February 2005

From: Thomas J. Wineman
11 Oak Lane
Osterville, MA 02655
twineman@cape.com

To: Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742-2751

RE: Comment on the Cape Wind Draft Environmental Impact Statement

Dear Ms. Adams,

Thank-you for the opportunity to comment on the DEIS; I consider this written comment to be supplemental to my verbal comments given in Yarmouth, MA.

I appreciate the thoroughness of the DEIS, and the task of filtering the enormous amounts of misinformation regarding this technology and this project.

It is critically important that this evaluation process be kept in perspective regarding the scope and scrutiny of this project compared to other types of energy projects. Also regarding both the operating permit period, 20 years, as

compared to other energy projects (nuclear and fossil fuel burning) as well as the need expedite implementing this technology for all the benefits of new sources of clean energy.

The costs of undue delay in this permitting process are very real, in terms of continued damage to human health and the environment; as well as the economic growth, and the technology expansion both regionally and nationally.

Some legitimate concerns for shortcomings of the EIS could be addressed as conditions when the permit is issued; thereby minimizing the need for supplemental studies and further delay.

The visual impact assessments need to be further quantified by the average visibility range in Nantucket Sound, as well as the effect haze will have on the perceived visibility.

The visual impact of the proposed straight grid (showing fence rowing effects) should be contrasted to an alternate plan of a double elliptical grid (laid out similar to loran lines) this would mitigate some of the □built look□ of fence rows.

Sincerely,

Thomas J. Wineman

Date: 24 February 2005

From: Thomas J. Wineman
11 Oak Lane
Osterville, MA 02655
twineman@cape.com

To: Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742-2751

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Some legitimate concerns for shortcomings of the EIS could be addressed as conditions when the permit is issued; thereby minimizing the need for supplemental studies and further delay.

The visual impact assessments need to be further quantified by the average visibility range in Nantucket Sound, as well as the effect haze will have on the perceived visibility.

The visual impact of the proposed straight grid (showing fence rowing effects) should be contrasted to an alternate plan of a double elliptical grid (laid out similar to loran lines) this would mitigate some of the 'built look' of fence rows.

Sincerely,

Thomas J. Wineman

Adams, Karen K NAE

From: Galen Cranz [gcranz@berkeley.edu]
Sent: Friday, February 25, 2005 12:44 AM
To: Energy, Wind NAE
Subject: wind energy

Karein KIrk-Adams:
I favor wind energy for numerous reasons stemming from the the virtues of renewable resources--clean energy, lessening of our oil dependency and therefore greater national security, an elegant contribution to the landscape.
Sincerely yours,

Galen Cranz, Ph.D.
Professor

Galen Cranz, Ph.D.
Professor
Department of Architecture
University of California, Berkeley 94720
fx 510.643.5607
ph 510.658.9330

"Resist the forces that keep sensual rationality from becoming our cultural standard."

Cape Pediatric Dental Associates

Dentistry for Infants, Children, Adolescents and those with Special Needs

February 24, 2004

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Ms Kirk-Adams,

I am very concerned about the Cape Wind project in Nantucket Sound and am weighing in against this proposal after much research and thought.

I have been involved in water recreation—swimming, sailing, motor boating and snorkeling for almost my entire life (52years old) and scuba diving (for the last 10 years). Growing up on the North Shore of Massachusetts, it's not hard to imagine how my life seemed to revolve around water—specifically the ocean. I even spent one summer of my college life working for the US Fish and Wildlife Service at Parker River National Wildlife Refuge. I was born in Salem, lived in Hamilton, Lynn (right on the ocean), Marblehead (right on the ocean) and Sturbridge through my school years. So my love of the ocean came from countless hours with my family and later my childhood friends around the waters of the North Shore. At one point in my late high school years I even wavered slightly from dentistry to studying oceanography, though way back in 1970 it was very hard to see how to make a living at it.

Then after dental school at Tufts, I went to serve my country in the US Army for a career. I retired after many tours of duty around the world—enjoying them all. And especially enjoyable were those tours when I could get to the water for relaxation and sports. I have flown in lots of aircraft in the military and jumped many parachute jumps in my career. Along with this I have over 50 hours towards a private pilot's license (which became to expensive to pursue) and spent many of those jumps in the Army as a Jumpmaster responsible for the safety of an entire aircraft load of soldiers. Many of my cousins served careers in

719 Main Street, Harwich Center, MA 02645-2751
(508) 432-7555 Fax (508) 432-1370 www.pediatricdentist.org

Adams, Karen K NAE

From: Liz Kniss [lizkniss@earthlink.net]
Sent: Friday, February 25, 2005 1:06 AM
To: Energy, Wind NAE
Subject: wind turbines in Nantucket Sound

004916

Dear sirs:

I write to express my opposition to placing 130 wind turbines in Nantucket Sound, which at the height of a multi-story building, and at 440 feet high, will alter the entire bay forever. While wind and other alternative energy sources are desirable, to place this totally new type of turbine in salt water, which uses fossil fuel to operate, seems unwise at best, and foolhardy and irresponsible at the worst.

Granted that many have paid tribute to this experiment, but if this is in the interest of the public, the report fails to make that argument. And to not make the argument defeats the purpose of the intent.

Please stop and consider the valuable resources that will be destroyed, to supposedly save others.

Why would such a desecration be allowed in one of the loveliest spots on earth. And one which not only allows 130 mechanical turbines to assault the eye, but constant noise and flashing lights around the clock to further assault the other senses.

If this experiment is to be allowed in the U.S., why not begin in some sparsely populated area. In California, where we live, thousands of moribund "windmills" cover our nearby hills, long forgotten as a power source.

Please, think carefully. This is a land use decision that cannot be reversed!

Sincerely,

Liz Kniss

Chair, Santa Clara County Board of Supervisors District 5
70 W. Hedding St. San Jose, CA, 95110

Adams, Karen K NAE

From: Charlie McDermott [cvm3324@hotmail.com]
Sent: Friday, February 25, 2005 2:25 AM
To: Energy, Wind NAE
Subject: Nantucket Sound

004917

Hello Karen Kirk-Adams
I am presently in Thailand where I was helping with the tsunami relief effort. I am sickened to think that you are considering Nantucket Sound for this wind energy development project. I am opposed to any private organization using and potentially destroying this magnificent natural resource. Please do the right thing here and vote this project down.

Thank you,

Charles V. McDermott

Adams, Karen K NAE

From: Ken Kinoshita [chinoshta@yahoo.com]
Sent: Friday, February 25, 2005 4:45 AM
To: Energy, Wind NAE
Subject: vote for wind energy

004918

> Dear Karen Kirk-Adams,
>
> I am in favor of the Cape Wind project because it will bring electricity, that vital energy we need without putting our future both in New England and the world at risk, I support the construction of the Cape Wind project because I believe that once completed it will prove to other communities, about the countless benefits that renewable energy brings us.

Ken Kinoshita

Providence, RI

ECODESIGN, Inc.

EAST: 197 Eighth St. Suite 506
Boston, MA 02129
Ph/Cell (617)241-9006 / (970)948-8822

Architecture
Urban Design
Environmental Planning
Film, Video & Illustration
Property Develop & Management

March 4, 2005

C04919

ATTENTION:
Please propose a moratorium on funding & permitting of offshore, coastal projects and any harbor projects in violation of Chapter 91 along the Massachusetts coast!

U.S. Army Corps of Engineers: ATT: Thomas Koning and Karen Adams
696 Virginia Road
Concord, MA 01742

RE: *"Comprehensive Coastal Zoning"* and *"Massachusetts Alternative Energy Technology and Planning Initiative"*: Real Answers on Proposed Power Plant?

U.S. Army Corps of Engineers: ATT: Thomas Koning and Karen Adams

We have written to thank Governor Romney, Attorney General, our Senators, Representatives, Commissioners and others in positions to understand the total impact of the proposed Wind Turbine Project for their strong, straightforward and reasoned stand against the proposed Wind Power Plant placement in Nantucket Sound.

Clearly, any "thinking person" is in favor of Alternative Energy, but...not for a 40 story high, 24 square mile industrial complex, plunked in the middle of the National Treasure of Nantucket Sound. Nor are they for the use of already outdated turbines, that are untested in our maritime conditions, on an un-zoned, unregulated Federal "land-grab" site.

Knee-jerk environmentalism and fears of foreign oil dependency are allowing the developer of the Nantucket Sound Energy Plant to use the generic arguments for Alternative Energy solutions of all kinds to miss-lead people into believing that his proposal is the only alternative. Using this combination of the "generic benefits of alternative energy" and "my project is the only alternative" approach, this developer has been consistently able to dodge the real questions put forth and to avoid exploration of viable, lower impact (but less profitable) alternatives.

Instead of allowing ourselves to be diverted by his constant repeat of these generic wind energy benefits, can we require the developer to give serious answers to real questions in a valid Environmental Impact Statement (EIS)?

People who protest this proposal are for Alternative Energy, but seriously question:
- Is this the right Site---in a National Natural Treasure comparable to our great National Parks like the Grand Canyon as opposed to an industrial, military or municipal site? *(Secretary Douglas Foy's desired "World Class Park System" in conjunction with "Comprehensive Coastal Zoning")*
- Is this the right Technology or should this massive (40 story high / multi-gallon oil storage, etc.) equipment be tested on land first and developed for greater efficiency and safety? Shortly new technologies and computer enhancing will offer capabilities for higher production in lower wind ranges. *("Alternative Energy Technology and Planning Initiative")*

- Is this the right Time or should our obsolete northeast electric power distribution grid be updated first? *(Alternative Energy Technology and Planning Initiative)*
- Is this the right Size? An un-tested, "largest ever" off-shore commercial scale project as opposed to phased or smaller, decentralized local or municipal based installations that would benefit the Cape and Islands area directly. *(Alternative Energy Technology and Planning Initiative)*
- Is it right for Federal land (?) with State jurisdictions in dispute to be turned over to a private developer for profit without zoning, regulations and payment policies in place? *("Comprehensive Coastal Zoning" and standard EIS requirement for confirmed undisputed site survey.)*
- How is the Environmental Impact Statement (EIS) process, with Army Corp of Engineers as the determining agency using the developer's own consultant research materials, a viable process? Who selects alternative sites to be reviewed and do they include onshore and de-centralized alternatives? *(Need valid Environmental Impact Statement through "Comprehensive Coastal Zoning" process.)*
- How does the visual destruction (turbines appearing as posts in a giant chain link fence with struts, lights, horns, signs, etc.) of the main attraction of Nantucket Sound really affect the major industry of the Cape and Islands...i.e.: Tourism? *("Comprehensive Coastal Zoning", also the full-scale turbine mock-up was never installed.)*
- Navigation and Security will be difficult (both visual and radar) with the pollution of shapes and the myriad of lights of all colors especially at night and in fog. Navigation will be impeded by structures, and no doubt eventually be halted by the Coast Guard for the thousands of small 3-4' draft boats that pass over this location. Can the developer guarantee free access and security to our waters? *("Comprehensive Coastal Zoning")*
- Does the risk of the many projected, but un-quantifiable impacts, related to navigation, security, fish, fishing, fowl, tourism, safety, historic resources, variable output, oil storage spill, etc. create a "critical mass" of unknown, but irreversible, impacts that should require an alternative land based site for testing of this technology? *("Comprehensive Coastal Zoning" and Alternative Energy Technology and Planning Initiative)*

The selection of "Alternative Sites" reviewed in the EIS is an extremely tricky section for the developers and the EIS reviewing agencies. If they determine that there are no viable comparable or acceptable alternative sites onshore as well as off, then they are in effect saying that the proposed technology is not a viable on-going Alternative Energy source in which to invest. **Inability to reproduce these power installations would be extremely damaging to all proponents of Alternative Energy. The first Alternative Energy projects must be successful---and repeatable---if they are to truly reduce foreign-based oil dependency and claim the benefits of cleaner air.**

A determination of the potential success through reproducibility of the proposed energy plant can only be determined by analysis of the questions above through *"Comprehensive Coastal Zoning"* in conjunction with a *"Alternative Energy Technology and Planning Initiative".* These initiatives are also appropriate to the science, technology and planning resources and maritime heritage of Massachusetts, New England and of our Nation.

Sincerely,

Sherrie S. Cutler, A.I.A.
ECODESIGN, Inc., President
Environmental Planning and Architecture
sscutler@ecodesign.com
Cell(970) 948-8822 or Ph(617)241-9006

ECODESIGN, Inc.

EAST: 197 Eighth St. #506
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sscutler@ECODESIGN.com

Architecture
Urban Design
Environmental Planning
Film, Video & Illustration
Property Develop & Management

ATTENTION: U.S.Army Corps of Engineers,Karen Adams & Thomas Koning

Please propose a moratorium on funding & permitting of offshore, coastal projects and any harbor projects in violation of Chapter 91 along the Massachusetts coast pending Ocean Policy and Coastal Zoning!

March 4, 2005
Admiral Thomas H. Collins
Commandant U.S.C.G.
U.S. Coast Guard HDQRS.
2100 Second St., SW,
Washington, DC 20593

RE: COASTAL SECURITY RISKS – NEED FOR GUIDELINES

DEAR U.S.C.G. COMMANDANT, Thomas H. Collins:

We must continue to support the U.S. Ocean's Commission's recommendation for federal guidelines and management of offshore development within the Outer continental shelf. Despite a failed amendment attempt by Senators Warner and Kennedy of the Armed Services Committee to the recent U.S. Defense Authorization Bill, we must see that bureaucratic agencies such as the Army Corps of Engineers are the wrong way to be determining coastal policy or permitting coastal structures, offshore wind power plants, waterfront uses, and reuse of our military base facilities. In light of our heightened security, planning for our vulnerable coastlines must be reevaluated from a comprehensive and strategic point of view.

Perhaps the only way to express the urgent need for this zoning of our off-shore US Government properties is to emphasize the security risk that exists in having only a few miles of unregulated, unmanaged and un-zoned territory running along the edges of and abutting the most populous areas of our country. Then to remember the destruction of the "Bright Field" in New Orleans, the Queen Elizabeth in Vineyard Sound, oil spills and bridge collisions by other run away ships of "non-hostile" intent.

This re-evaluation is something that should be supported by Homeland Security as it is a major security loop-hole in the U.S....greatly surpassing even the lack of inspection of hulls of ships and holds of planes. There are coastal areas and harbors, as in the case of Boston Harbor's Charlestown Navy Yard piers at the "Head of the Harbor", where Coast Guard ships and police cars and boats line up 8-strong to escort hugely explosive LNG (liquid natural gas) tankers into the heart of the city. There is the proposal of a maze of Wind Turbines across many acres of some of the most frequently navigated waters of the country with large oil storage facilities on piers.

Those strategic piers, or turbine fields, or pier in the case of Charlestown's Pier 5, can now be arbitrarily turned over to private industrialized compounds or multi-story housing units that will be within 50 yards of dangerous LNG tankers by agencies unguided and/or dismissive of Ocean Policy or Coastal Zoning. These agencies such as the BRA (Boston Redevelopment Authority) and the Army Corps of Engineers are not even coordinating with Homeland Security on their actions

The message of these examples: Even where some minimum protection and zoning is in place against such inappropriate development and uses by virtue of such regulations as MEPA's (MA Environmental Protection Agency) Chapter 91, these very few protections can be easily superceded, ignored or

"grandfathered" and the security loophole of our coasts not only remains, but is enlarged. Some coastal developments such as wind turbine plants and combustible offshore platforms lack even these easily discarded State or local guidelines.

Sincerely Yours,

Sherrie S. Cutler, A.I.A. (sscutler@ECODESIGN.com)
ECODESIGN, Inc., President
Environmental Planning, Urban Design, Architecture

CC: MA Governor Mitt Romney; Homeland Security Director; Senator Kennedy; Senator Kerry; US Senate Committee on Commerce, Science and Transportation, Sub-Committee-Senator Snow; Commander - Maritime Defense Command One, David P. Pekoske; etc.

Adams, Karen K NAE

From: Henry duPont [henry@blockisland.com]
Sent: Thursday, February 24, 2005 6:54 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us; info@capewind.org
Subject: Cape Wind Project Comment

004920

Ms. Karen Kirk-Adams
Army Corps of Engineers

Via Email,

Dear Ms. Kirk-Adams,

Thank you for the opportunity to provide public comment on the Cape Wind Power Development Proposal.

As you know, proposals to deploy any new power producing technology on a meaningful scale will generate controversy. The Army Corps of Engineers should be applauded for providing a process where the stake holders can all he heard with respect to this project.

After carefully listening to the debate and reviewing the Draft Environmental Report, I strongly feel that the benefits of the proposed Cape Wind Project clearly outweigh any negative impacts.

Approval of the Cape Wind Project application has will have a significant positive effect on the regions energy cost, self sufficiency, and air quality. New England has led the Nation with the development of other forms of high technology. The nation's first offshore wind farm, producing clean inexpensive energy, should also be on that list.

Thank you again for accepting our public comment,

Sincerely,

(signed)

Henry G duPont
Lorax Energy Systems, LLC
4 Airport Rd.
Block Island, RI 02807

offshore@wind-power.com

Adams, Karen K NAE

From: taylor spalt [tdotonline@hotmail.com]
Sent: Friday, February 25, 2005 8:45 AM
To: Energy, Wind NAE
Subject: Cape Wind Project

004921

Dear Karen Kirk-Adams,

My name is Taylor Spalt and I am currently a senior at URI and the President of a Renewable Energy Club there. Our current goal is to have a 1.6 MW wind turbine be constructed on URI4s campus by 2006. I am in very strong support of the Cape Wind Project for the following reasons:

As stated in your summary, the citizens of New England could save $53 milion dollars as a result of decreased health care costs that would come from a cleaner air, water, and food supply; as an economic benefit, our electric rates will be lowered; it is well within reason to assume that our nations security will be increased as a result of being less dependent on the outside world for energy needs; and lastly I consider wind turbines much more aesthetically beautiful than power plants that omit poisonous gases during the night so that no one may see just how ugly the byproducts of coal power production are. I sincerely hope that you take this testimony seriously at what I and many others believe is a crucial point for New England4s future with reagrds to energy, health, saftey, and its economy. Thank you for your time.

Sincerely,

Taylor Spalt

tdotonline@hotmail.com

Adams, Karen K NAE

From: PIZELDA@aol.com
Sent: Friday, February 25, 2005 9:51 AM
To: Energy, Wind NAE
Subject: No Subject

004922

Dear Karen Kirk-Adams
We are totally in favor of the Cape Wind project as a means of helping to clear the air in New England and thus helping to reduce the health risks caused by the coal-burning plants, specifically those in Somerset, MA.
Patricia and Richard Owen
0309 Narragansett Avenue
Prudence Island, RI 02872

Adams, Karen K NAE

From: Emily Abbott [info@capewind.org]
Sent: Friday, February 25, 2005 9:21 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

C04923

Dear Ms. Karen Kirk-Adams:

Please support the Cape Wind project. I believe it is important to pursue alternatives to fossil fuels.

Sincerely,

Emily Abbott
116 Intervale Street
Brockton, MA 02302

cc:
Capewind

Adams, Karen K NAE

From: Jonathan Betsch [info@capewind.org]
Sent: Friday, February 25, 2005 9:22 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004924

Dear Ms. Karen Kirk-Adams:

Please support the Cape Wind project. I believe it is important to pursue alternatives to fossil fuels.

Sincerely,

Jonathan Betsch
116 Intervale Street
Brockton, MA 02302

cc:
Capewind

Adams, Karen K NAE

From: Peter Kelly-Detwiler [info@capewind.org]
Sent: Friday, February 25, 2005 9:47 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004925

Dear Ms. Karen Kirk-Adams:

I am writing in support of the Cape Wind project. I believe the visual "blight" will be minimal compared to the impacts of most conventional power sources. Furthermore, while there is the issue of "taking" a public resource (Nantucket Sound). Thise same takings occur every day that coal is burned and releases mercury into our fish, or other fossil fuesl are burned that create NOx and SOx, or release particulates.

This project should go ahead. And then, a comprehensive plan should be put in place to ensure that future such projects are reviewed in a more proactive manner.

Sincerely,

Peter Kelly-Detwiler

Sincerely,

Peter Kelly-Detwiler
748 First Parish Rd
Scituate, MA 02066

cc:
Capewind

Adams, Karen K NAE

From: Rstubbs123@aol.com
Sent: Friday, February 25, 2005 10:48 AM
To: Energy, Wind NAE
Subject: Cape Wind

I wish to offer my support to your Cape Wind program of placing wind turbines in the waters off the Cape islands.

004926

R. Stubbs

Adams, Karen K NAE

From: rhennig@jmfund.org
Sent: Friday, February 25, 2005 11:25 AM
To: pdascombe@capecodcommission.org; mepa@state.ma.us; Energy, Wind NAE
Subject: Cape Wind comments


-


-


CCAB Cape Wind comment letter....

001927

Please see attached letter.

--
Ruth G. Hennig
Executive Director
The John Merck Fund
47 Winter Street, 7th Floor
Boston, MA 02108
(617) 556-4120 phone
(617) 556-4130 fax
rhennig@jmfund.org

February 24, 2005

Karen Kirk Adams
Cape Wind Energy Project, EIS Project Manager
Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office
Anne Canaday, **EOEA No. 12643**
100 Cambridge Street, 9th Floor
Boston, MA 02114

Cape Cod Commission
3225 Main Street
PO Box 226
Barnstable, MA 02630-0226

Comments on the Cape Wind Energy Project

Climate Change Action Brookline (CCAB) is pleased to submit comments on the Cape Wind Energy Project. CCAB supports this project for its ability to provide a significant source of new, renewable energy to the region. We believe the Draft EIS/DEIR/DRI has adequately addressed the issues raised in the Scope, including a review of project alternatives, and that the project should be allowed to proceed to the next stage of review.

CCAB is an organization of citizens who are concerned about the impacts of global warming and are working to address the problem on a local level. Global warming threatens our public health, environment and economy. Immediate action is required to address these impacts. The Town of Brookline is an active participant in the Cities for Climate Protection (CCP) Program. We have committed to substantially reduce our community's contribution to greenhouse gas (GHG) emissions and developed a Local Action Plan on Climate Change that describes policies and programs that will help us reach our goals. We are working within our community and with the Town to implement policies and programs and educate our citizens about the importance of this issue. Efforts include a clean energy requirement for the municipal electricity contract, the purchase of hybrid vehicles for the town fleet, incorporating solar panels and other sustainable design elements into the Department of Public Health building renovation, and education efforts such as Car Free School Day and the Compact Fluorescent Bulbathon campaign.

While we work at a local level to address this problem, we recognize the critical need for state and federal policy makers to acknowledge the problem and take action to address it. Governor Mitt Romney's release of the Massachusetts Climate Protection Plan is a step in the right direction. It commits the state to specific GHG emission reduction targets and includes a commitment to promote new, renewable energy.

The Cape Wind Energy Project will provide meaningful reductions in GHG emissions and can address the growing danger of climate change. It will help us meet growing energy demands without increasing air pollution. It will avoid the significant environmental and health impacts associated with fossil fuel fired power plants. It has the potential to become the largest single source of new, renewable energy in New England and it will help meet requirements associated with the Renewable Portfolio Standard (RPS). In addition, it is consistent with the Massachusetts Climate Protection Plan's stated goal of promoting new, renewable energy resources.

Any project of this size, and particularly one within an area of significant natural resources such as Nantucket Sound, deserves a thorough and rigorous public review to ensure that the project is understood, that its impacts are disclosed and properly mitigated, and that federal and state permits ensure this mitigation will be provided. This review process has met those goals. The DEIS/DEIR/DRI document demonstrates that, overall, the project will benefit our environment, our health, and our economy. It adequately describes potential impacts and demonstrates that they can be adequately avoided, minimized and mitigated. Commitments to mitigation can be addressed further during development and review of the Final EIS/EIR/DRI and project permitting.

Thank you for your consideration of these comments. If you have any questions regarding these comments, please contact me at (617) 738-7552.

Sincerely,

Ruth Hennig
Climate Change Action Brookline (CCAB)

Adams, Karen K NAE

From: Jonathan Keller [jonkeller_2000@yahoo.com]
Sent: Friday, February 25, 2005 1:03 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

004928

We must turn away from non-renewable enerby sources and toward renewable ones. Its a no-brainer! Cape Wind is a path towards a sustainable future!

Sincerely,

Jonathan Keller
381 East 10th St.
Apt. #5
New York, NY 10009-4786

cc:
Capewind

Adams, Karen K NAE

From: Stanley C. Bodell [sbodell2@cox.net]
Sent: Friday, February 25, 2005 3:00 PM
To: Energy, Wind NAE
Subject: WIND FARM NANRUCKET SOUND

001929

Renewable energy must come. Nantucket sound is **not** the place to start.
The sound is public land. It is akin to a national park on Cape Cod
I have many hours on these waters. I don't think it is right for
a private company to destroy its beauty and freedom to cruise on it..
The company gets something for nothing.
I think more thought should go into the selection of any site .
The sound can get very rough.. What happens to 40,000 gal of oil
Sitting on an open platform?
Stanley Bodell Providence RI
Summer in Osterville, Cape Cod

M. Blossom Hoag *177 Webster Street* *Boston, MA, 02128*

February 24 2005

Karen Kirk Adams, Cape Wind Energy Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

004930

Attention: **Regulatory Division**

RE: file no. NEA-2004-338-1

Dear Ms. Adams,

I would like to request that a Supplemental Draft Environmental Impact Statement and Report be required to address inadequate data and missing information as outlined below.

Since this project is the first of its kind in the country and there are no existing regulations in place, I would propose that this project be analyzed for being phased in over time which would give time for more data collection, regulation development, and public input on the visual impacts of the turbines plus redesign as technology developes.

One major concern in the process is the lack of a governance structure for development in oceanographic waters. As the agency that has the lead for the EIS process, and, with its limited jurisdictional role in this area, the Army Corps of Engineers (ACOE), is under an obligation to assess the industrialization of offshore waters, especially for which this project might set a precedence. I believe this is inadequately addressed. While I do believe that federal regulations must be developed, I, also, do not believe that this project should be denied until these regulations are implemented. However, this project should have to adhere to any regulations retroactively and not grandfathered in to avoid regulations.

While I fully recognize the immediate urgency of renewable energy creation and use, I also would like to see attention paid to the details of this project in respect to environmental impacts and adherence to regulations as they are put in place..

A major flaw in this document is comparing this average 170 MW facility with only 450 MW facilities. The comparison should be with like facilities for average output, not maximum output. This analysis needs to be redone.

There has not been an adequate analysis of alternative sites and specifically if there could be multiple sites of smaller sizes.

I would also like a full three years of avian data collected. Since it is already approaching 2 and 1/2 years, I believe that this can be completed as the review process progresses. However better analysis is needed for bats, for the split wing duck, and for the nocturnal passerines

What should be addressed in a DEIR/DEIS:

- A process for ocean governance in response to the US Ocean Commission and Pew recommendations. The commercial use of our last public trust lands (i.e., the ocean) should be managed by a public agency that has a stewardship charge for marine ecosystems, probably the National Oceanographic and Atmospheric Administration (NOAA). There must be provisions for specific leasing conditions, royalty payments, clear jurisdiction for setting lease and permit conditions, including requirement for responsibility for maintenance, liability, avoidance/minimization/mitigation of environmental impacts, monitoring requirements with clear reporting and response in case of problems, decommissioning, and more.

- Carry out a phased implementation analysis, with a first phase large enough to be economically feasible and small enough to have limited impact. Continue to collect data if a phased project is implemented and adjust the project as necessary in response to the additional data

- Better analysis of alternative comparable energy sites

I believe that Cape Wind has acted in good faith and that the Army Corps of Engineers has made every effort to produce a credible document. I do, however, hope that the Army Corps will acknowledge the deficiencies that I, and others, have outlined and requrire a supplemental EIS/EIR.

Thank you for this opportunity to comment.

Sincerely,

M. Blossom Hoag

004931

FELIX D. ARROYO
BOSTON CITY COUNCILLOR AT-LARGE

February 24, 2005

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Adams:

As a City Councilor at-Large representing the residents of Boston, I am writing to support the draft Environmental Impact Statement recently issued for the Cape Wind Project. I respectively urge that you complete a final EIS in a timely way so that this important project can proceed.

As the father of two children afflicted with asthma, I fully understand the importance of clean, healthy neighborhoods for everyone. As a City Councillor, I have consistently worked to publicize the links between pollution and public health, while working to clean up Boston's environment. Though the project is not being proposed for Boston, Cape Wind would dramatically reduce carbon dioxide emissions -- the main cause of global warming – in Massachusetts and the region. By doing so it would make the single greatest contribution to preventing climate change of any project or policy measure in New England.

Moreover, your draft EIS appears to indicate that there will be no negative impact from Cape Wind on aquatic life, minimal impacts on commercial and recreational boating, and a relatively small number of bird kills per year. It is my further understanding that Cape Wind would emit no air or water pollution and would serve to reduce air pollution throughout Massachusetts and the region. By one estimate, Cape Wind would have public health benefits of $53 million a year due to reduced deaths and illness from respiratory ailments. Finally, Cape Wind would also have economic benefits by reducing our reliance on fossil fuels.

For these reasons, I urge the Army Corps of Engineers to give its approval to the Cape Wind Project.

Sincerely,

Felix D. Arroyo

CC: Anne Canady, Exec. Office of Environmental Affairs

BOSTON CITY HALL, ONE CITY HALL SQUARE, BOSTON, MASSACHUSETTS 02201
617-635-3115 FAX: 617-635-3734 FELIXD.ARRYO@CI.BOSTON.MA.US

Adams, Karen K NAE

From: forman@africana.com
Sent: Friday, February 25, 2005 4:16 PM
To: Energy, Wind NAE
Subject: Support for Cape Wind

As a resident of Cape Cod (Wellfleet), I STRONGLY SUPPORT the Cape Wind project, because the energy produced is clean, immediately available, and will have **no deleterious impact on the health** of our population. Moreover, I think they are beautiful!

Frances Forman

004932

Adams, Karen K NAE

From: cats1234@juno.com
Sent: Friday, February 25, 2005 5:27 PM
To: Energy, Wind NAE
Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

034933

Dear Colonel Koning,

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds
- 12 months of radar observations of flying wildlife
- A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

Janet Shoemaker
155 Sam Hill Rd
Guilford, Connecticut 06437

Adams, Karen K NAE

From: rhyork@capecod.net
Sent: Friday, February 25, 2005 5:52 PM
To: Energy, Wind NAE
Subject: Cape Wind Project Draft EIR

Note: The following comments were e-mailed yesterday, February 24, to the address "windenergy@usace.mil". No error message was received at that time. Today I have received an address error message, and am therefore re-submitting these comments.
- John York

Please enter the following comments into the record for the Cape Wind Windfarm Draft Environmental Impact Report.

Visual Impact

Much of the concern of residents of the surrounding shoreline involves the visual impact of the large structures on the distant horizon. Renderings of the turbine's appearance from onshore locations have been presented. However, rendering the appearance of large objects on a distant horizon requires several assumptions of magnification, viewer position relative to the objects and relative to the rendered image, light source direction and intensity, atmoshpheric effects on light transmission, etc.

The proper values of these parameters to render the actual appearance of the real objects cannot be determined analytically, because the appearance of a distant object is not only the result of these optical parameters but is also the result of the mechanism of the viewer's perception. For example, the perceived image will tend to magnify an object which is the focus of attention, particularly when there is little other detail in the larger field of view.

For this reason, any supposed rendering must be calibrated to the actual perception in the environment and circumstances being rendered. Such calibration may be accomplished by rendering a known object or group of objects from a known vantage point, preparing several renderings with a range of magnifications, lighting, view point relative to the rendered image, etc., standing at the actual view point with the cadidate renderings, and comparing the actual appearnce to the appearance of each of the renderings. In this manner it should be possible to determine what values of magnification, etc., produce a rendering which most closely matches the appearance of the actual object or group of objects.

Any rendering that is not so calibrated is not relavent to the question of the turbine's visual impact, and should not be considered in an objective evaluation of the project. Calibration using several different existing objects in a variety of settings would be most useful to ensure meaningful rendering of the turbine's appearance, as it is not likely that any one existing object or view will match all of the parameters of the wind farm installation.

Some possible objects and view points for this calibration would include Bishop and Clerk lighthouse viewed from Craigville Beach or other vantage points along the shore at a distace of four to six miles, or the Martha's Vineyard skyline, standpipes, radio towers, etc., viewed from the Falmouth shore.

Navigation

1. The proponent has promoted the Nantucket Sound/Horseshoe Shoal location as a desireable site because the shoal is not navigable water. However, close inspection of the proposed turbine placement indicates that no turbines will be placed in the shallow water of the shoal. Turbines are not placed directly upon the shoal because turbines can only be placed in locations that are accessable to construction, maintenance and supply vessels. Therefore, the turbines, by definition, must be placed in navigable waters.

2. The turbine rotors will create a serious hazard for rescue aircraft within the perimeter of the wind farm. At night, it is possible the turbines would be an insurmountable obstacle to airborn rescue operations in these navigable waters.

3. The Draft Environmental Impact Report does not give sufficient consideration to the possibility that the wind farm site may at some time after the installation of the project be declared a restriced area for at least recreational boaters and possibly to all navigation not related to the wind farm. Although the site might not be declared restricted at the time of installation, one boating accident which results in serious harm or loss of life due to inaccessability to rescue aircraft would provide ample motivation to restrict or exclude recreational or all non-essential navigation from the interior of the turbine area. Therefore, the report should consider the consequences of such an exclusion or restriction.

4. In night time, the large quantity of lights covering such a large area could present a very confusing situation. Within this myriad of lights it may become difficult to distinguish between existing navigational aides, navigation lights placed low on nearby towers, and aircraft warning lights placed high on more distant towers. This situation may render navigational aides other than the turbine towers useless within or near the wind farm site, and may make it very difficult for aa boater without the assistance of GPS satelite navigation to determine position within the wind farm perimeter, and would provide further motivation to institute a restriction or exclusion zone around the turbine area.

Non-navigational Visual Impact of Night-time Lighting

Assessment of the non-navigational visual impact of night-time lighting may be difficult for reasons similar to those discussed in the above comments on day-time visual impact. As much as possible, this assessment should be based upon criteria and considerations which are appropriate to the reality of the project and to the ambiant lighting conditions of Nantucket sound at night.

More attention should be given to developing appropriate metrics for night-time visual impact. Consideration of whether or not light from the wind farm will obscure or hinder viewing of the moon is not a sufficient metric for the visual impact of the wind farm lights.

Thank you for your consideration of these concerns.

John York
P.O. Box 497
Cataumet, Mass. 02534

(508)563-3845

Adams, Karen K NAE

From: Robert Donahue [drantares@earthlink.net]
Sent: Friday, February 25, 2005 7:49 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us.
Subject: FW: Comments Regarding Proposed Turbines

004936

Please propose a moratorium on funding & permitting of offshore, coastal projects and any proposed harbor projects in violation of Chapter 91 along the Massachusetts coast pending Ocean Policy and Coastal Zoning!

-- Original Message -----
From: Robert Donahue
To: wind.energy@usace.army.mil
Sent: 2/25/2005 7:39:59 PM
Subject: Comments Regarding Proposed Turbines

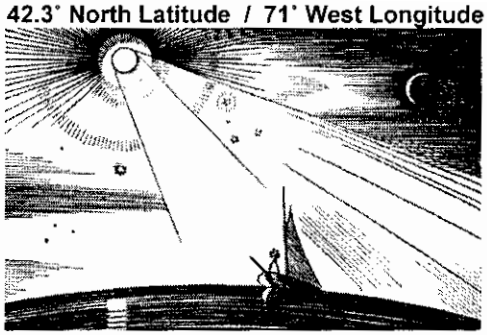
Attention: Thomas Koning and Karen Adams, U.S. Army Corp. of Engineers

Please print above attachments for inclusion in Comment Period section.

Thank You, Dr. Robert M. Donahue

Robert Donahue
drantares@earthlink.net
EarthLink Revolves Around You.

42.3° North Latitude / 71° West Longitude



004935

FLAGSHIP WHARF #506 • 197 Eighth Street • BOSTON NAVY YARD, MA 02129

Feb. 25, 2005

TO: U.S. Army Corp of Engineers, ATT: Karen Adams and Thomas Koning
FOR: Comments regarding Wind Turbines in Nantucket Sound

RE: Insufficient Technology Review of Wind Turbines / Installation in Marine Environment
CC: MEPA

Dear Sir or Madam:

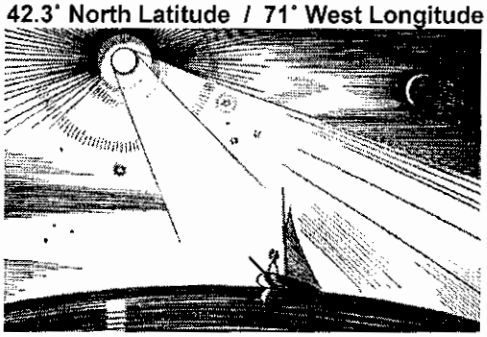
There has been insufficient technological review of the precise technology, installation and maintenance of the wind turbines proposed for a massive industrial plant in Nantucket Sound. There is considerable evidence that these turbines have not been adequately tested and are already an obsolete technology.

As an ocean sailor for half a century and with a full load of engineering courses from the U.S. Coast Guard Academy, I have long experience with the power of the wind and the sea---for good and for bad. Among the things I have learned just from experience are "If it's going to happen, it will happen out there and it will be when or where you least expect". A corollary to this unscientific theory might be that problems are more likely to develop in a marine environment, more difficult to solve, more expensive and difficult to repair, and more likely to lead to a dangerous situation.

Ocean voyages are a logical occasion in which to consider alternative energy sources and in the maritime community there are therefore probably the most advanced small-scale solar installations, wind generators and combinations. The most common nautical use is solar and, when asked, most will say wind generator use is "too unreliable", "too many moving parts", "not as effective", "too noisy", "still too big", "not as advanced", "every day there's another problem" and "something better is due out soon", etc. The new Duo-Gen which operates with both wind and water is being reported as much more efficient in "water mode".

One has to wonder, as there have been numerous solitary wind generating installations placed on our nation's east coast pretty much from the founding of the county, then why are there so few now and so few real technical advances? Recent onshore attempts have been in Cuttyhunk, on private property, etc., but none has continued operation for long and they remain abandoned for a while before removal. The reasons given range from maintenance problems, noise and inefficiency to "interference with TV reception"!

42.3° North Latitude / 71° West Longitude



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Although given permission, the developer has not chosen to install one test example of the actual turbine of which he proposes to install over 100 (a number that has changed over the course of this proposal). Essentially none of the complicated aspects of this technology has been tested in situ. Is it expected that this huge generation plant is to be installed without proper testing and "a priori".

Who are the authorities responsible for a thorough scientific review of the proposed technologies for this still evolving and rapidly obsolete wind energy source and do they have the necessary specialized knowledge and distance from the developer? Any scientist would confirm that none of this review can be adequately done without studies of an on site test case of several years duration.

Sincerely Yours,

Dr. Robert Donahue

Adams, Karen K NAE

From: Dianne James [dianne.james@verizon.net]

Sent: Friday, February 25, 2005 10:45 PM

To: Energy, Wind NAE

Subject: Opposition to windmill farm in Nantucket Sound

Karen K. Adams, Project Manager
Regulatory Division
Cape Wind Energy Project

CC4937

Dear Ms. Adams,

I am writing to express my extreme opposition to the Cape Wind Power Plant proposal to locate windmills in the waters between Nantucket and Cape Cod shores.

Aside from the fact that the beauty of the area will be permanently marred by these towering metal structures, it seems incredible to me that a private company and private individuals will be allowed to locate their money-making business in an area of pristine beauty of United States coastline, and to reap the financial benefits of this scheme. This land, this ocean, belongs to all the people - not to a money-making company.

It is my understanding that the power generated by these windmills will not directly benefit the people of Cape Cod, as many have been led to believe, but it will be transferred to the "power grid" which supplies power to much of New England and beyond. The direct benefit to the people of Cape Cod will be minimal at best. The proponents of this plan have tried to convince the population that the 130 towers - taller that the Statue of Liberty - will hardly be seen from the shore; that fishing and boating traffic will hardly be affected; and that the migrating birds in the area will be unaware of the metal hindrances suddenly appearing in their flyways. This is obviously untrue. Think about it!

To use an old cliche, the unsophisticated people of Cape Cod, many of them elderly retirees, are having the "wool pulled over their eyes" by slick entrepreneurs who see a way to make money.

Many people who favor this proposal are thinking about their monthly bills. They have been encouraged by those promoting this scheme to believe that their costs for power will be greatly decreased by this private venture. The fact is that the only people who stand to gain are those who are using the public lands for private enterprise. If private individuals are allowed to use public lands and waters for their own financial benefit, where does it end? Will Wallmart or Home Depot soon covet a spot in Saquatucket Harbor?

I was born on Cape Cod. I attended a prestigious college (Wellesley College) and graduate school off-Cape, and returned here to teach in the public school system for 27 years because I loved Cape Cod. My children were born here and live here. When I was a young girl living near Craigville Beach, there was no parking lot there - only sand and beach grass stretching from the lazy surf to the sandy road. Now, there is a parking lot with hundreds of cars jockeying for position all summer long. If you allow this aberration, this construction of mighty windmills whose worth to individuals living here is minimal, but whose financial benefit to those building them will be substantial, not only will the residents of Cape Cod be negatively affected, but so will all those who love to come here every year to relax and enjoy the life that we all love. The view from the parking lot, over the cars, to the beach and on to the sparkling waters of Nantucket sound will no longer stretch peacefully toward the far-off horizon, but will be cluttered with a hundred towering windmills.

The environment can not speak for itself. People have to stand up for it. I think you must take into account all of the people who are standing up for the ocean and the sand and the beautiful sky, and sunsets, and sunrises which we are so lucky to have here. Don't let businessmen come in to make money from our land.

Sincerely yours,

E. Dianne James
P. O. Box 7
Hyannisport, MA 02647

Adams, Karen K NAE

From: George Fox [georgesfox@msn.com]
Sent: Friday, February 25, 2005 7:11 PM
To: Energy, Wind NAE
Subject: Wind Farm

Hi,

C04938

The wind farm slated for Nantucket Sound must be built. And there must be more built wherever it is feasable. Renewable resource energy production is the solution to the world's long term needs. Now is the time to take the steps forward.

Thank You,

George Fox

Adams, Karen K NAE

From: Rick A Heinick [rah@rhsa.com]

Sent: Saturday, February 26, 2005 11:27 AM

To: Energy, Wind NAE

Subject: Stop the Wind Project

004939

Colonel Thomas Koning
U.S. Army Corps of Engineers,
696 Virginia Rd.,
Concord, MA 01742-2751

Dear Colonel Koning,

The Army Corps of Engineers should deny Cape Wind's application to construct 130 turbines in Nantucket Sound. There is no federal authorization to use our public trust resources for this purpose. Nor does the developer have any property rights to exploit these public lands.
Without federal authorization, any means for protecting coastal resources, or any process for compensating the public, this project cannot be in the public interest. That question must be answered by our representatives after national debate, not by one office of a federal agency improperly arrogating the authority of Congress.
In addition, the draft environmental impact statement that has been prepared is inadequate. More studies are needed before the Army Corps can assess the potential impacts of the Cape Wind project. Indeed, those studies are the very studies that Congress would require to shape a national policy on offshore wind energy. Without this critical information, there is simply no way to determine whether the Cape Wind project is in the best interests of both the public and wildlife.

Finally, the Bush Administration needs to develop responsible clean energy and ocean conservation programs. The continued failure to do so is sacrificing our environment to private developers.
As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is seriously flawed, because it ignores relevant information and draws conclusions based on inadequate research.

Sincerely,
Rick and Karen Heinick

Cape Address: Shore Drive, New Seabury

Rick Heinick
9 Marsh St.
Dedham, MA 02026
Tele: 781-461-1750
Email: rah@rhsa.com

Adams, Karen K NAE

From: WernerIII@aol.com

Sent: Saturday, February 26, 2005 12:15 PM

To: wind.energy@usace.army; milGOffice@state.ma.us

Cc: kennedy@senate.gov; ChafeENEWS@chafee.senate.gov; jack@reed.senate.gov

Subject: Cape Cod Wind Energy Project!

To: Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager,
Corps of Engineers

004940

Dear MS Karen Kirk Adams:
1. Subject Project concerns all of New England's voters which prompted me to copy leaders of our NE Community.
2. Below (and attached word file) of my concerns regarding subject environmental Impacts:

Polar ice caps and glaciers are melting, sea levels are rising, and global climate is climbing. We indulge in unencumbered consumption of foreign oil at a rate of more than $200,000 per minute. And our solution is to adapt to climate change, drill in national parks and wildlife refuges, and have Detroit build more gas guzzlers (fielded as: "the public wants it"), or worse, invade oil rich countries. Yes, there are valiant efforts to stem the tide with renewable energy projects. Individual home owners are installing solar panels, in Europe green buildings are surfacing, and wind farms have become a preferred energy source. But we have our own local wind farm: The Cape Wind Energy Project, at Horseshoe Shoals of the Nantucket Sound, as proposed by the Cape Wind Associates, LLC. As part of the Cape Wind's application process, the Army Corps of Engineers is sponsoring invitations to review the 4,000-page Draft Environmental Impact Statement (DEIS) and to provide comments by no later than Feb 25, 2005.

The proposal to construct 130 turbine towers (taller than the Statue of Liberty) for a wind power farm at Horseshoe Shoal of Nantucket Sound, should be a solution of last resort. The wind farm proposal embraces a 24 to 28 square mile area. Each tower has an operating diameter of 341 feet for its three blades. Each tower foundation will penetrate the sea floor by 82 feet and 6 feet wide. The design features submarine cables submerged for at least 5 miles before reaching land, with conduits, and concrete vaults to be constructed for transition to landmass. In addition, an electric service platform, with a maintenance building, a heliport, boat landing, several transformers, with two 750 kVA emergency generators, and fire suppression equipment will be added as well. This undertaking is to supply all of 454 MWe, and, I am sorry to say, only a band-aide in our national in general and our New England energy requirements and future dependency.

My recommendation would be to add a second (Pilgrim-2) nuclear unit to the existing Pilgrim-1 facility near Plymouth, MA that would be significantly less intrusive on both people and wild life. Pilgrim-1 produces 653 MWe and has been in service since Sep 15, 1972. I believe nuclear fuel is a much more reliable source of energy than the elements of weather and wind. With utility earnings of 3 to 4 cents per kilowatt-hour, wind energy seems not a very competitive return on investment (ROI), making it

economically a high-risk venture. Another alternative could be to add wind towers to the Pilgrim Facility, as well as other utility locations, with negligible environmental impact. Also, land-bound turbine towers would avoid the uncertainties posed by rising sea levels brought about by the increased rate in polar ice and glacier melts.

The Wind Farm's Construction Phase perhaps presents the greatest threat. Aside from the brutal invasion of the marine ecology at Horseshoe Shoals, potentially an even greater disturbance in the balance of nature could take place at Stellwagen Bank Sanctuary, just north of the Cape Cod. Southwesterly and southerly winds and ocean currents could feasibly carry sediments and industrial contaminants past the Cape to this marine sanctuary. With sea levels rising rapidly and major cataclysmic events precipitated by unpredictable weather phenomena at every seasonal as well as geological disturbance, we need to take advantage of our national knowledge base and rethink our ban-aid solutions to finite fossil and high carbon energy sources. As coastal or shore custodians we need to protect this vital breeding grounds of the seas, and we must get it right the first time, as it may be our last time. We owe that to our descendants.

If one looks at the Bush Administration's National Energy Policy, the Oceans Blueprint for the 21st Century, and the most recent legislation supporting more traditional energy sectors, one has to wonder how much longer it will take to bring together all of our national policies and diminishing resources into an integrated and singular national strategy. As a New England Voter, I urge the many endorsers and energy coalitions to coerce our Federal Government to insist on a fair and balanced energy program that will allow for responsible progression of energy-dependent economic interests. And, compel our Congress to fund an integrated and national Energy Program that embraces alternative energy development of a scope and breadth as that provided for in the Apollo Program. Our nation must step up to the role of stewardship to protect and preserve planet earth. I am all for clean power, but until we have the answers as to where our nation is heading, the wind farm should not move forward.

The study for the most part seems dismissive of any concerns one may have over marine life and water birds. The conclusion one draws is that whales, dolphins, and marine species in general prefer the Stellwagen Sanctuary north of Cape Cod. However, the U.S. Department of Energy has stated in their plans that "...the construction and operation of wind turbines can create real impacts on a range of environmental resources." Aside from the brutal invasion of the marine ecology at Horseshoe Shoals during construction, an even greater disturbance could be on the entire marine ecology of Stellwagen Bank Sanctuary, at the expense of marine life and fishermen alike. Is it not possible that southwesterly and southerly winds and ocean currents could carry sediments and industrial contaminants past the Cape to Stellwagen and destroy the marine ecology for good? The study indicates that some male whale migration has declined due to a reduced Sand Lance population, a preferred food source of some whales. The study does not suggest that this population decline could be as a direct result in increased interest to commercially fish this species.

My recommendation would be to add a second (Pilgrim-2) nuclear unit to the existing Pilgrim-1 facility near Plymouth, MA that would be significantly less intrusive on both people and wild life. Pilgrim-1 produces 653 MWe and has been in service since Sep 15, 1972. I believe nuclear fuel is a much more reliable source of energy than the elements of wind and weather for a 24 square mile area to produce only 454 MWe. Or, for that matter, add wind turbines at each of our existing power plant facilities and possibly a more cost effective solution to clean power. The environmental benefits nuclear power would outweigh the cost of turbine tower construction and the risk of destroying both the licensed site's and possibly the Stellwagen's pristine ecology. A cost-benefit study well worth considering, when one considers that nuclear safety in at the turn of the 21st

Century passed the 25th anniversary of the landmark Reactor Safety Study -- better known as "WASH 1400", perhaps forgotten by the "renewable" energy proponents.
As the planet's custodians we owe that to our descendants to get it right the first time, and not be subject to crisis management.

Again, we need to complete a plan that incorporates national as well as New England's Energy needs, conservation, bio-mass, Hydrogen, etc., for an integrated strategy as opposed to seizing spiraling business opportunity facilitated by tax breaks. Without the benefit of a comprehensive and integrated program for all energy uses and cost benefit analyses we are likely to rush into future problems. I respectfully submit my comments for consideration to seek alternatives to the proposed wind farm at the expense of the marine ecology that is in danger of suffering irreversible depletion (please see attached accredited illustrations below for impact analysis).

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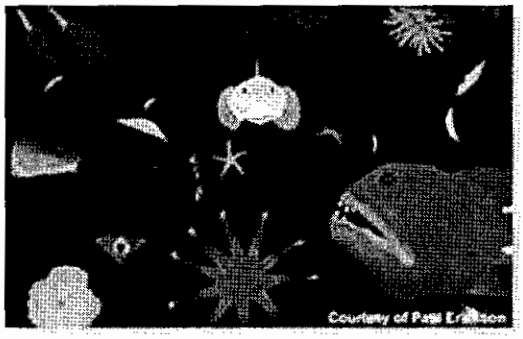

Surprising color and fascinating faces
greet visitors to the deep boulder reefs
of the Stellwagen Bank Sanctuary.
"Stellwagen Boulder Garden"
by Paul Erickson (1999).
Gift to the Sanctuary.

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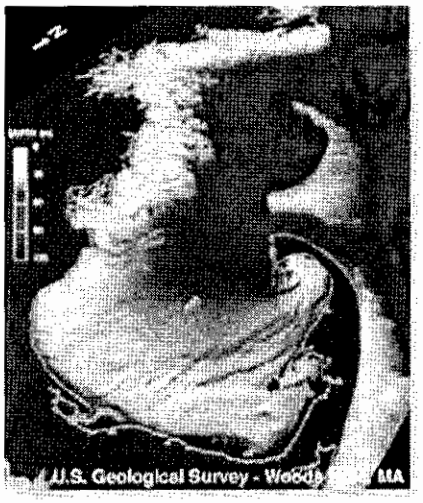

Stellwagen Bank is the shallow mound
rising just north of Cape Cod in this
three-dimensional image.

==========

Please feel free to contact me if there are further

Questions regarding this national energy issue.

Sincerely,
Werner Loell
718 Wapping Road
Portsmouth, RI 02871
401-846-3496
Wernerlll@aol.com

Polar ice caps and glaciers are melting, sea levels are rising, and global climate is climbing. We indulge in unencumbered consumption of foreign oil at a rate of more than $200,000 per minute. And our solution is to adapt to climate change, drill in national parks and wildlife refuges, and have Detroit build more gas guzzlers (fielded as: "the public wants it"), or worse, invade oil rich countries. Yes, there are valiant efforts to stem the tide with renewable energy projects. Individual home owners are installing solar panels, in Europe green buildings are surfacing, and wind farms have become a preferred energy source. But we have our own local wind farm: The Cape Wind Energy Project, at Horseshoe Shoals of the Nantucket Sound, as proposed by the Cape Wind Associates, LLC. As part of the Cape Wind's application process, the Army Corp of Engineers is sponsoring invitations to review the 4,000-page Draft Environmental Impact Statement (DEIS) and to provide comments by no later than Feb 25, 2005.

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If one looks at the Bush Administration's National Energy Policy, the Oceans Blueprint for the 21st Century, and the most recent legislation supporting more traditional energy sectors, one has to wonder how much longer it will take to bring together all of our national policies and diminishing resources into an integrated and singular national strategy. As a New England voter, I urge the many endorsers and energy coalitions to coerce our Federal Government to insist on a fair and balanced energy program that will allow for responsible progression of energy-dependent economic interests. And, compel our Congress to fund an integrated and national Energy

Program that embraces alternative energy development of a scope and breadth as that provided for in the Apollo Program. Our nation must step up to the role of stewardship to protect and preserve planet earth. I am all for clean power, but until we have the answers as to where our nation is heading, the wind farm should not move forward.

The study for the most part seems dismissive of any concerns one may have over marine life and water birds. The conclusion one draws is that whales, dolphins, and marine species in general prefer the Stellwagen Sanctuary north of Cape Cod. However, the U.S Department of Energy has stated in their plans that "...the construction and operation of wind turbines can create real impacts on a range of environmental resources." Aside from the brutal invasion of the marine ecology at Horseshoe Shoals during construction, an even greater disturbance could be on the entire marine ecology of Stellwagen Bank Sanctuary, at the expense of marine life and fishermen alike. Is it not possible that southwesterly and southerly winds and ocean currents could carry sediments and industrial contaminants past the Cape to Stellwagen and destroy the marine ecology for good? The study indicates that some male whale migration has declined due to a reduced Sand Lance population, a preferred food source of some whales. The study does not suggest that this population decline could be as a direct result in increased interest to commercially fish this species.

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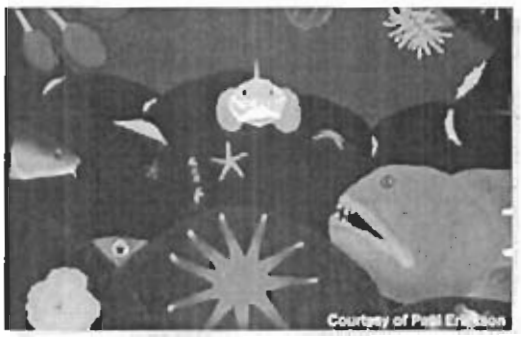
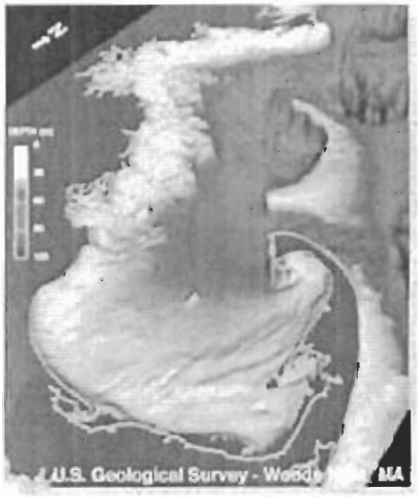
wernerlll@aol.com



Surprising color and fascinating faces greet visitors to the deep boulder reefs of the Stellwagen Bank Sanctuary. "Stellwagen Boulder Garden" by Paul Erickson (1999). Gift to the Sanctuary.



Stellwagen Bank is the shallow mound rising just north of Cape Cod in this three-dimensional image.

Adams, Karen K NAE

From: DRC4COOLS@cs.com
Sent: Saturday, February 26, 2005 2:40 PM
To: Energy, Wind NAE
Subject: PRO-wind power project

034941

Karen:
I am in favor of the project because the on-line capacity of these wind turbines will replace older, dirtier, kless efficient, more costly fossil plants.

Thank you,
DAVID COOLEY,
Prudence island, RI

Adams, Karen K NAE

From: John Blittersdorf [cvsolar@aol.com]
Sent: Saturday, February 26, 2005 1:39 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

Please support the Cape Wind Project. All reasonable renewable energy sites must be used for us to get off foreign oil. To stop terrorism we MUST get off foreign oil and stop using more than our share of the worlds resources.

Sincerely,

John Blittersdorf
200 West Road
N. Chittenden, VT 05763

cc:
Capewind

Adams, Karen K NAE

From: CHRISTOPHER BUTTS [GREENMONSTER3824@COMCAST.NET]
Sent: Saturday, February 26, 2005 6:09 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I fully support the Cape Wind Project.The sooner it gets built the better.
We need this to decrease cancer causing pollution from Coal and Oil plants and lower my electricity costs over the next 30 years.

Build it and I will have a reason to visit the Cape again to take a boat tour of the farm!This will Help tourism-not hurt it.

No more oil spills or dirty coal strip mining.

It's good for the Cape,Mass, and the Country.
And I want it in my state and my back yard!

5 years from now when the price of oil is $100+ a barrel we will be saying thank god we have the Cape Wind Farm!

Stop delaying the future and support CAPE WIND.

http://capewind.whgrp.com/

Sincerely,

CHRISTOPHER BUTTS
582 Middle St.
APT.1
Weymouth, MA 02189

cc:
Capewind

Adams, Karen K NAE

From: kathleen.chane@xerox.com
Sent: Friday, February 25, 2005 5:53 PM
To: Energy, Wind NAE
Subject: Please extend the public comment period on the Cape Wind DEIS

004944

SAVE OUR SOUND
alliance to protect nantucket sound

Please immediately extend the public comment period on the Draft Environmental Impact Statement for the proposed Cape Wind project to 180 days. Any shorter time period is entirely insufficient to allow the public ample opportunity to provide input on such a lengthy and important document on a complex and controversial project.

Thank you for your prompt attention to this matter.

Sincerely,

Kathleen Chane

Adams, Karen K NAE

From: Cathy Fisher [chaosrules@comcast.net]
Sent: Saturday, February 26, 2005 6:23 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I have two children that live in Massachusetts.

I fully support the Cape Wind Project.The sooner it gets built the better.
We need this to decrease cancer causing pollution from Coal and Oil plants and lower my childrens electricity costs over the next 30 years.

Build it and I will have a reason to visit the Cape again to take a boat tour of the farm!This will Help tourism-not hurt it.

No more oil spills or dirty coal strip mining.

It's good for the Cape,Mass,New England and the Country.

5 years from now when the price of oil is $100+ a barrel we will be saying thank god we have the Cape Wind Farm!

Once Cape Wind is built it will help prospects for wind power in our state of Connecticut.

Stop delaying the future and support CAPE WIND.

http://capewind.whgrp.com/

Sincerely,

Cathy Fisher
60 Blacksmith Dr.
Middletown, CT 06457

cc:
Capewind

Adams, Karen K NAE

From: Kim Cree [info@capewind.org]
Sent: Saturday, February 26, 2005 6:49 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I fully support the Cape Wind Project.The sooner it gets built the better.
We need this to decrease cancer causing pollution from Coal and Oil plants and lower my electricity costs over the next 30 years.

Build it and I will have a reason to visit the Cape again to take a boat tour of the farm!This will Help tourism-not hurt it.

No more oil spills or dirty coal strip mining.

It's good for the Cape,Mass, and the Country.

And I want it in my state and my back yard!

5 years from now when the price of oil is $100+ a barrel we will be saying thank god we have the Cape Wind Farm!

Stop delaying the future and support CAPE WIND.

http://capewind.whgrp.com/

Sincerely,

Kim Cree
180 Main St.
Bridgewater, MA 02324

cc:
Capewind

Adams, Karen K NAE

From: Robert Bernal [robertbernal@mail.com]
Sent: Sunday, February 27, 2005 11:31 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

000547

Dear Ms. Karen Kirk-Adams:

It is essential and obvious to extract a clean form of energy to displace dwindling fossil fuel supplies and thereby prolonging the fossil products industry further into the future. About half a million utility scale wind turbines would provide 100% + of America's electrical needs at a cost of (only) roughly 1 cent per Kwh for 15 to 20 years!

The Cape wind project is just one good example of how we can obtain almost unlimited renewable energy for just slightly more than (new) conventional sources!

Robert Bernal - energy activist

Sincerely,

Robert Bernal
Box 2045
Big Bear City, CA 92314

cc:
Capewind

Adams, Karen K NAE

From: Marcelo Vinces [info@capewind.org]
Sent: Sunday, February 27, 2005 10:55 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

The war in Iraq shows us how more than ever we must make the US independent of Middle Eastern oil. Please support clean wind energy!

004948

Sincerely,

Marcelo Vinces
13 Clarendon Ave
Apt 2
Somerville, MA 02144

cc:
Capewind

Adams, Karen K NAE

From: Annie Hill [anniehill1@yahoo.com]
Sent: Monday, February 28, 2005 12:19 AM
To: Energy, Wind NAE
Subject: please don't

I know you probably won't read a 10 year old's letter, but I hope you will. I love the view from my room and I dont want you to obstruct it. And last summer, my frends and i worked or butts off to raise money to provent you from doing what you are going to do. I like the idea of wind energy but please don't build practicly a power plant. I dont want to give our public ocean away to a private develoment. And Nantucket Sound is a national park, and i ask you, would you do this to Yellowstone National Park? I hope you read this letter, because a small thing can make a diffrence. Did you know that Abraham Lincon grew a beard because a little girl told him he wold look good with it?

thank you for your time,
Annie Hill

Adams, Karen K NAE

From: Matt Wormser [matt_wormser@yahoo.com]
Sent: Monday, February 28, 2005 9:43 AM
To: Energy, Wind NAE; mepa@state.ma.us; pdascombe@capecodcommission.org
Subject: Cape Wind

4950

Dear Sir or Madam,

While I realize the Cape Wind Draft Environmental Impact Statement Comment Period has officially ended, I would still like to voice my very strong support for the project, and hope that you move forward with approval. As an envionmentalist with a strong knowledge of the threats that fossil fuel combusion present to our region and licensed Captain who has sailed the waters of Nantucket sound for most of my 37 years, I am highly knowledgeable of the costs and benefits that this project represents. To me, there is no question that the project benefits; hundreds of megawatts of clean power, vastly offset any liabilities, which are almost exclusively aesthetic in nature.

Please approve this landmark project, which will put our region in the forefront of the clean energy revolution that our world so desperately needs.

Best regards,

Matt Wormser
20 Farmstead Dr
Shelburne, VT 05482

Adams, Karen K NAE

From: Paul Jestings [pjestings@portsmouthabbey.org]
Sent: Monday, February 28, 2005 11:44 AM
To: Energy, Wind NAE
Subject: Wind power

In support of wind turbines;

As we quickly approach the exhausting of our fossil fuel supplies and are faced with the ever rising cost of energy, we must look for clean and efficient alternatives. It would be irresponsible to our children to not look towards their future. Few admire the look of power lines and poles that crowed our streets and countryside, but it's the cost of having electricity and most realize the necessity of their existence. Wind Turbines are graceful, sculpture like structures and once they become a common vista throughout the country, will represent a positive investment in everyone's future . We cannot let the concerns of a few set up road blocks for the inevitable solutions for our future.

Each Turbine that is erected represents, "One small step for man, one giant leap for mankind"

Paul Jestings
Director Of Operations
Portsmouth Abbey School
285 Cory's Lane
(401)643-1234
pjestings@portsmouthabbey.org

Adams, Karen K NAE

From: Ted Hepp [thepp@nyc.rr.com]
Sent: Tuesday, March 01, 2005 11:39 AM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: Cape Wind Project support

This is one of the most important projects to start the country on a much needed effort to support and create alternative energy sources. It also is the beginning of an effort to exploit on e of the most important untapped renewable energy resources in the US.

Best Regards,
Ted

Adams, Karen K NAE

From: Doug Fitzsimmons [dofitz@comcast.net]
Sent: Tuesday, March 01, 2005 11:43 AM
To: Energy, Wind NAE
Subject: Cape Wind

You have my total support in your efforts to build a wind farm off Nantucket. MARY FITZSIMMONS, Cambridge.

Adams, Karen K NAE

From: John Burger [jburger@neit.edu]
Sent: Tuesday, March 01, 2005 10:58 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

CO495.5

Sincerely,

John Burger
249 Merrymount Drive
Warwick, RI 02888

cc:
Capewind

Adams, Karen K NAE

From: John Burger [jburger@neit.edu]
Sent: Tuesday, March 01, 2005 11:02 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I am in favor of utilizing the renewable resource that wind represents.
I believe that the costs and fact that wind turbines are pollution free make it a necessary part of our future planning to meet our energy demands.
The Cape Wind project is something that should not be delayed. Wind power has HUGE advantages over coal/oil/nuclear... Please do not delay this project. People will always use 'not in my backyard' complaints, but this proposed project has benefits that far outweigh these ....

John Burger

Sincerely,

John Burger
249 Merrymount Drive
Warwick, RI 02888

cc:
Capewind

Adams, Karen K NAE

From: The Pen [aol_au@yahoo.com]
Sent: Monday, February 28, 2005 6:57 PM
To: Energy, Wind NAE
Subject: Should Congress investigate the integrity of presidential press conferences

How is it that a phony journalist was promoted to ask propaganda questions at White House press conferences? The issue is not whether Mr. Guckert (Jeff Gannon) might have moonlighted as a prostitute. The real question is whether the press itself, in the exercise of its professionalism should have more control over the process. Is it time for Congress to get involved to make sure the tough questions are allowed to be asked? What do you think we should do?

Here is a one click page that sends your personal message to all your members of Congress at once.

http://www.usalone.org/press.htm

And remember we will set up a custom action page for any issue of your own you like for no charge, and you get a snazzy drop-in dynamic menu for your own web page to help promote it at

http://www.usalone.org/action_center.html

Please forward this message and post this link everywhere you can to everyone you know.

Or if you want to get off the list, just email back indicating same.

NEVER SEND SPAM. IT IS BAD.